الجامعة العربية الخاصة
للعلوم والتكنولوجيا

# Human Computer interaction

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**T2-2025**
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# 4.Prototyping

- Prototyping
  - Low-fidelity Prototyping
  - High-fidelity Prototyping

# Low-fidelity Prototyping

1. Paper Prototype
2. Sketching
3. Storyboards
4. Card-based prototypes

# Outline

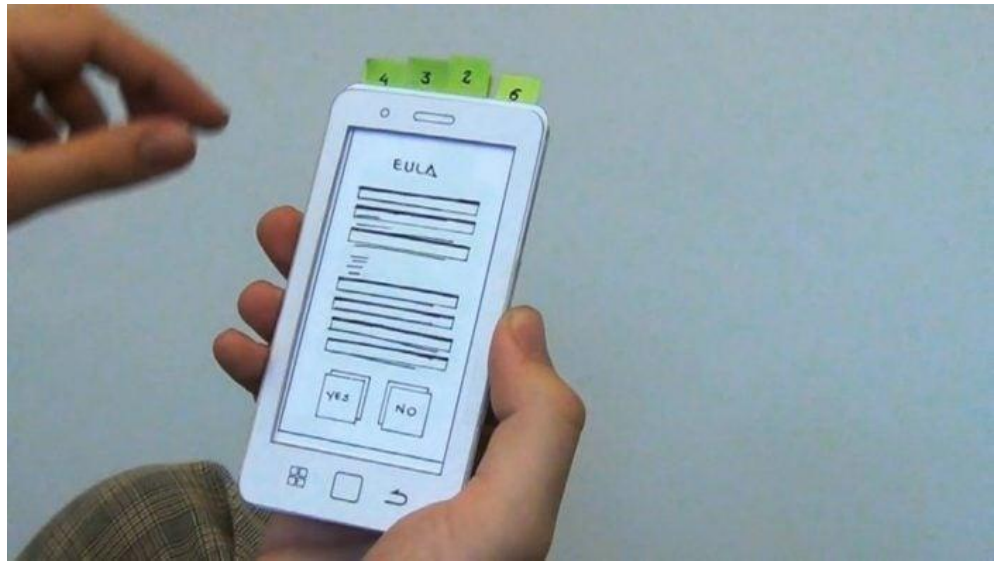
# Paper Prototyping

- What is wireframe?
- What is Paper Prototype ?
- What is the purpose of paper prototype ?
- How to create a paper prototype ?
- Paper Prototype Examples

# What is Wireframe

**Wireframe**: Low-fidelity, in monochrome, with placeholder images and text.

•A wireframe is a visual representation of a product page that the designer can use to arrange page elements.
•Wireframes can be used as a foundation for lo-fi prototypes. Clickable wireframes are the simplest form of interactive prototype created by linking static wireframes together.



# What is Paper Prototype

Paper Prototype is **an effective manner to model and simulate** your system ideas and convert it to a tangible and negotiable sample, with lowest cost in time, effort, and money

Paper Prototype is a **simple model** of the system design using only paper, pen and sketching

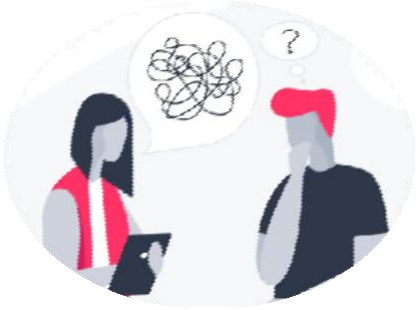
Paper prototyping is a great way to create and **test new** designs quickly

Before the system implementation, you can create a paper prototype for that system, then you can convert the paper prototype to an interactive prototype that designed using tools. Finally, after negotiation with the client/designers based on the system prototype, **you can start system coding and implementation**

# What is the purpose of paper prototyping

**To** provide better understanding for the real system components, interfaces content, and interaction styles

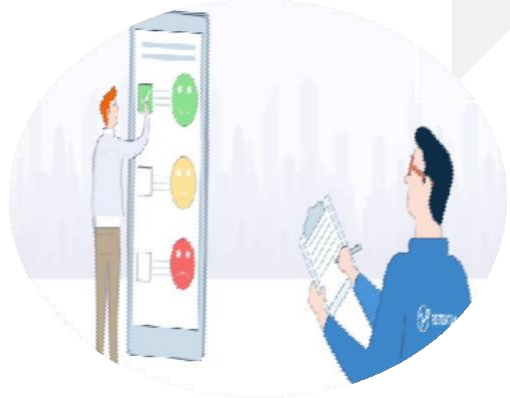
**To** help in brainstorming sessions and gather system requirements from client/user



**To** ensure client/user satisfaction before starting implementation

**To** easily communicate with the client/users

**To** use it in Usability Testing, and improve the system interfaces and interaction based on the usability testing results



# How to create a paper prototype

**Discuss with the your team:** your system ideas, number of interfaces, interfaces content, and interaction style.

**You only need for:** paper and pen to start sketching interfaces and content for each interface.

**No need for:** professional sketching skills.

**You can add:** some creativity to your paper prototype using colours to highlight buttons, error or warning message, and so on. Also you can use paper scraps or sticky note papers to simulate some widgets such as keyboard or text fields.

# Mind Mapping

**To Discuss with your team:** your system ideas, number of interfaces,  interfaces content, and interaction style. You can **use Mind Mapping**

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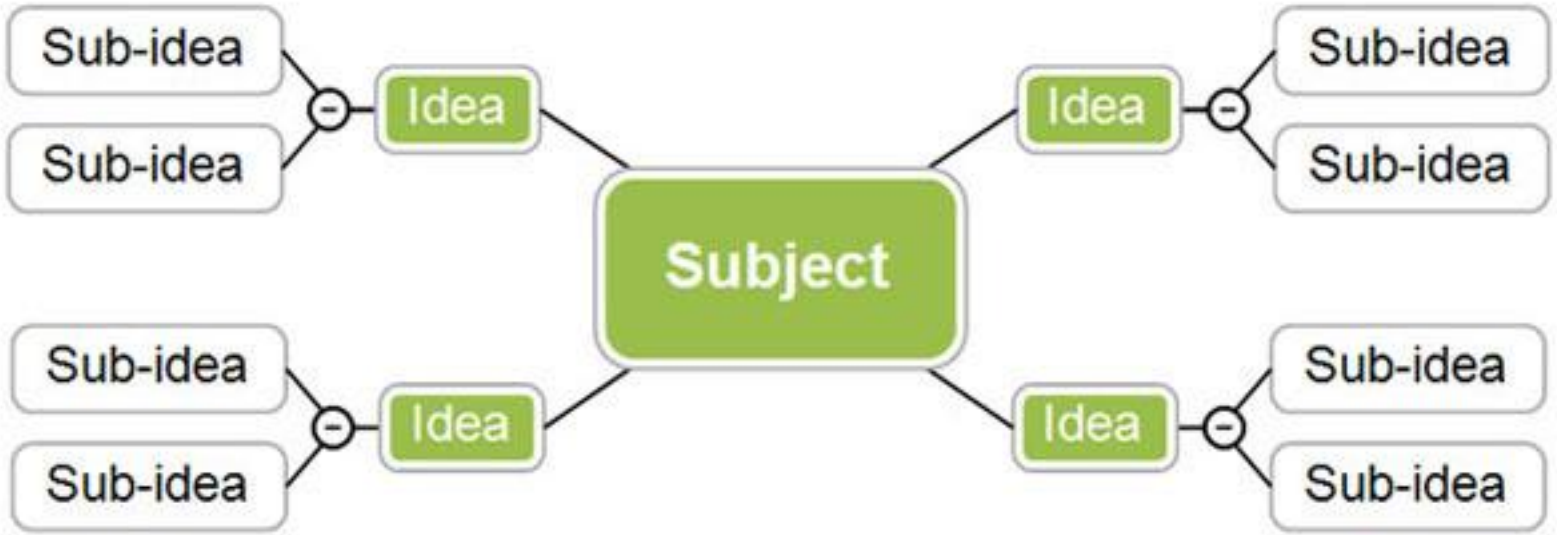
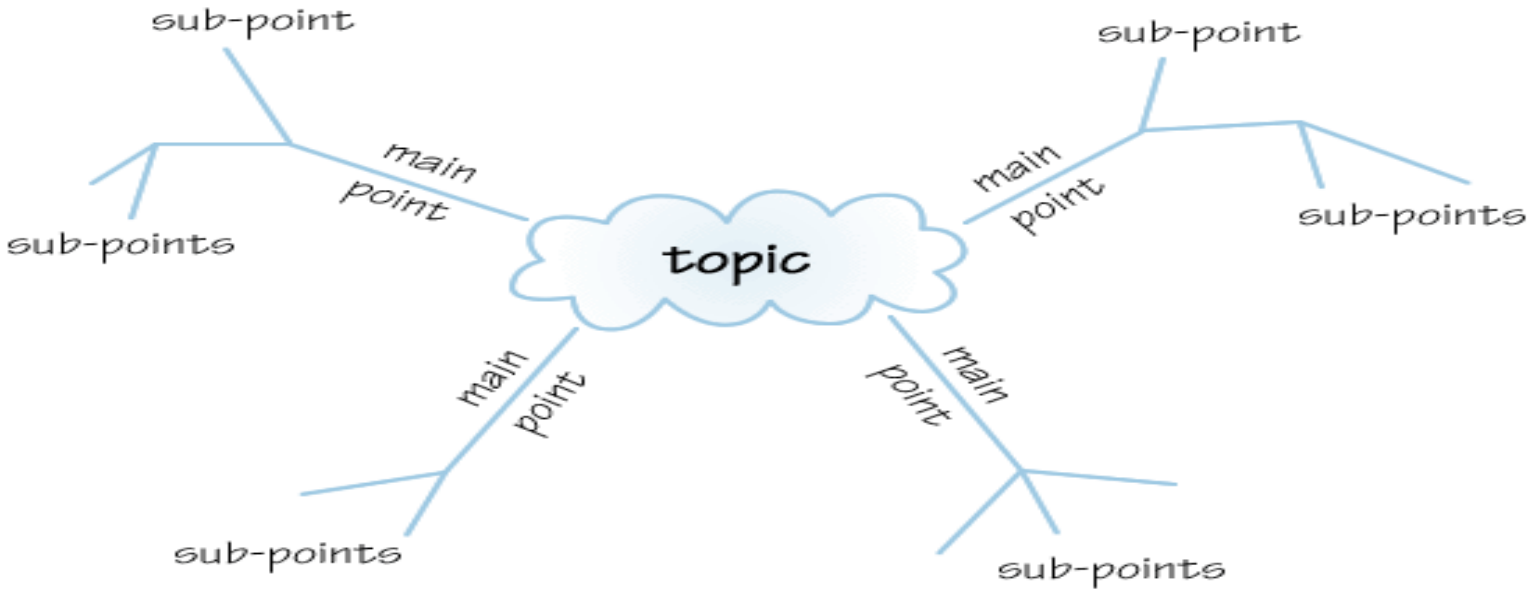
# What is a Mind Map?

A **mind map** is a diagram for representing tasks, words, concepts, or items linked to and arranged around a central concept or subject.

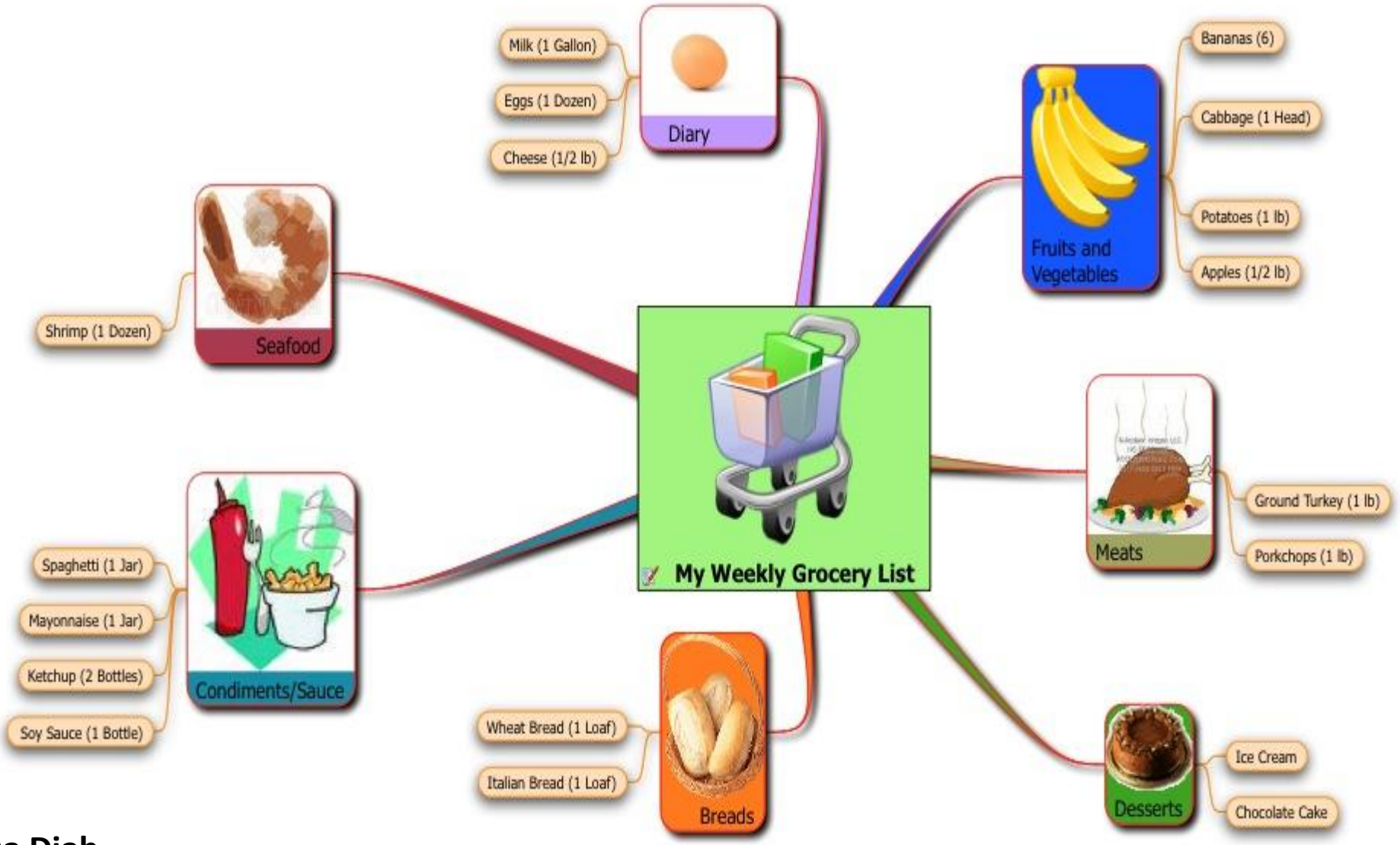


# Three Little Steps to Creating Your Mind Map

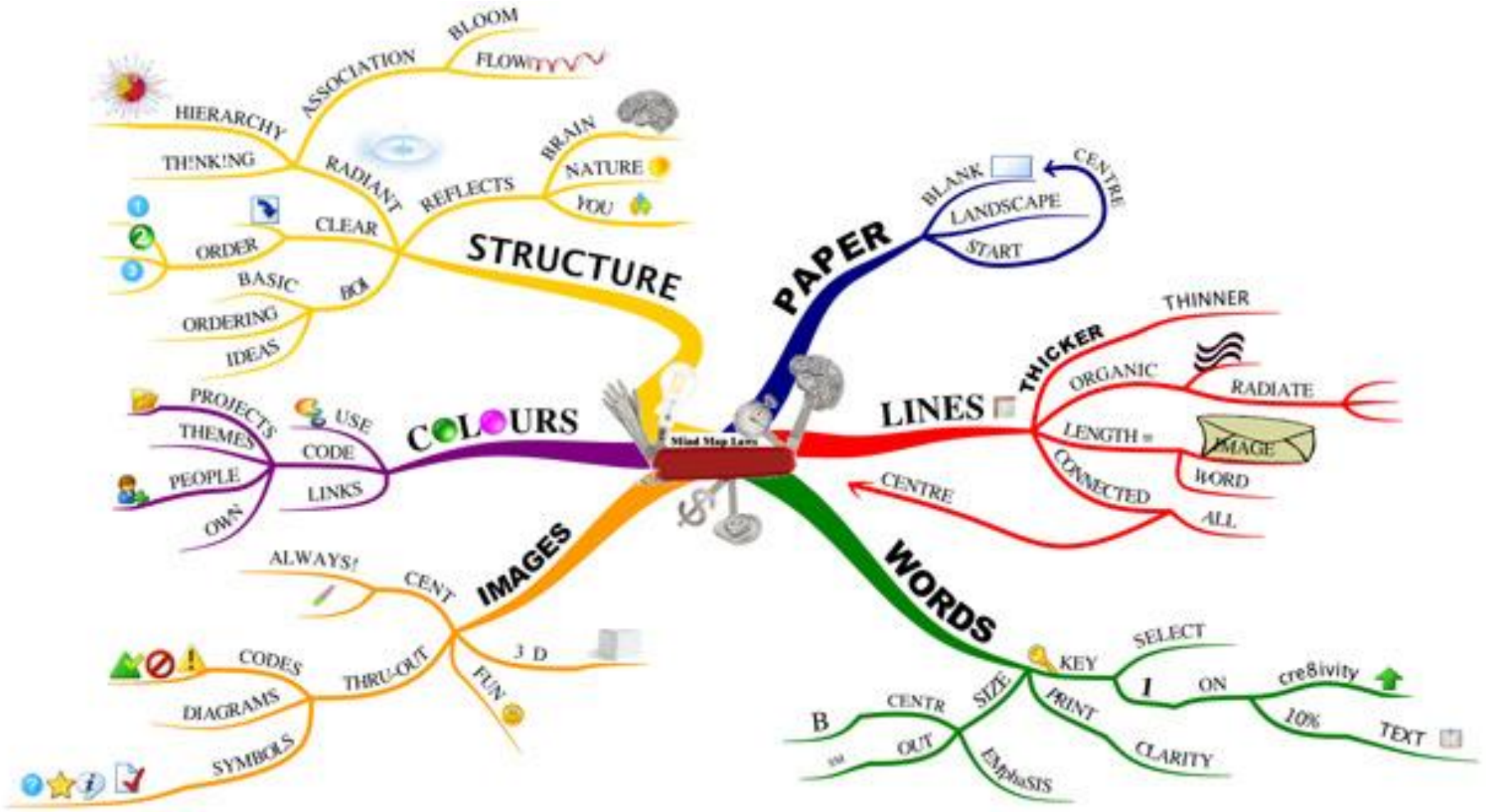
**Add the central topic**
**Add branches**
**Add sub-branches**



# mind mapping Example



# mind mapping Example

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# mind mapping Example

# mind mapping tools

1.

   **ClickUp**

   Best free plan for mind mapping software

2.


   **MindMeister**

   Best mind mapping software for teams

3.

   **Microsoft Visio**

   Best mind mapping software for Microsoft users

4.

   **MindGenius**

   Best simple mind mapping software

5.

   **SmartDraw**

   Best for mind mapping templates

# mind mapping tools

6

## Lucidchart

Best mind mapping software for scaling organizations

7

## Coggle

Best for embeddable mind maps

8

## XMind

Best mobile mind mapping app

9

## MindManager

Mind mapping tool that works with Microsoft Teams and supports both Windows/MacOS.

10

## Mindomo

Simple concept mapping tool with a key feature being their user-friendly, omni-platform experience across cloud, desktop, Android, & iOS.

# Paper Prototype Example (1)

Click the button to watch a video example •

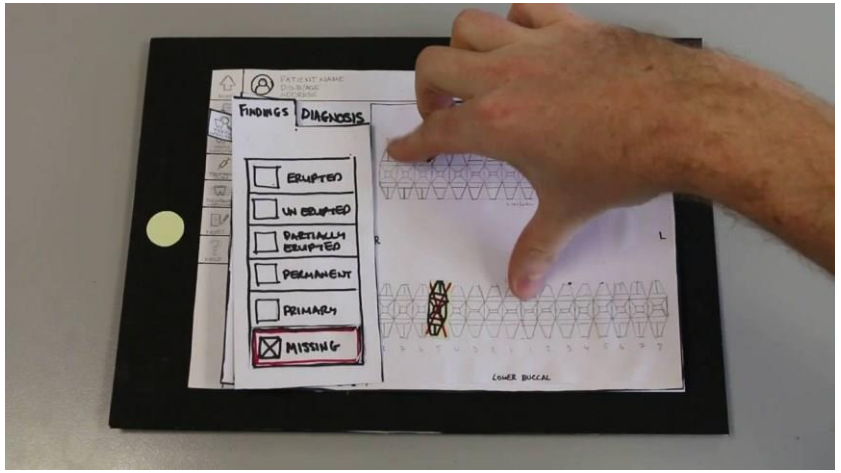
https://www.youtube.com/watch?v=y20E3qBmHpg

Click here to visit URL

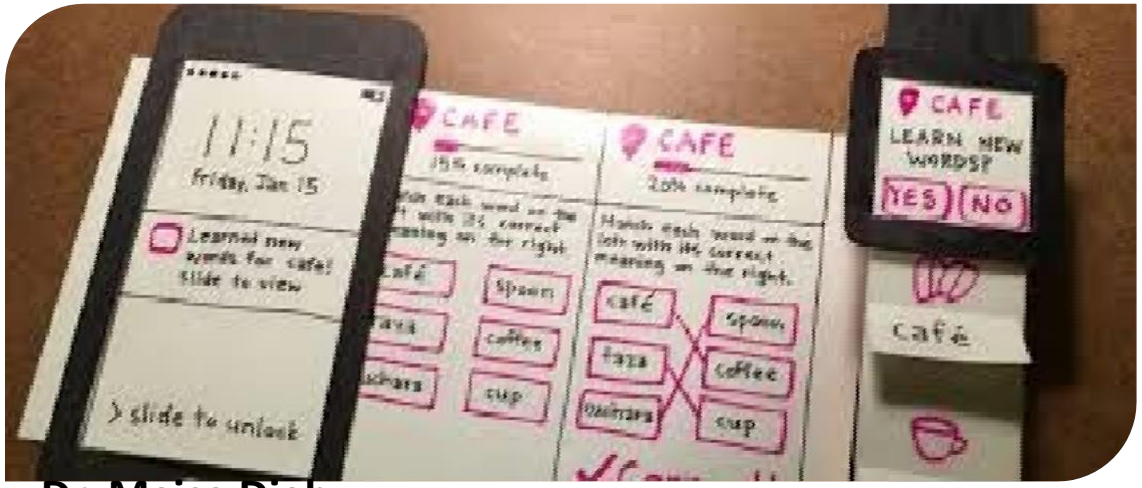
https://www.youtube.com/watch?v=yafaGNFu8Eg

Click here to visit URL

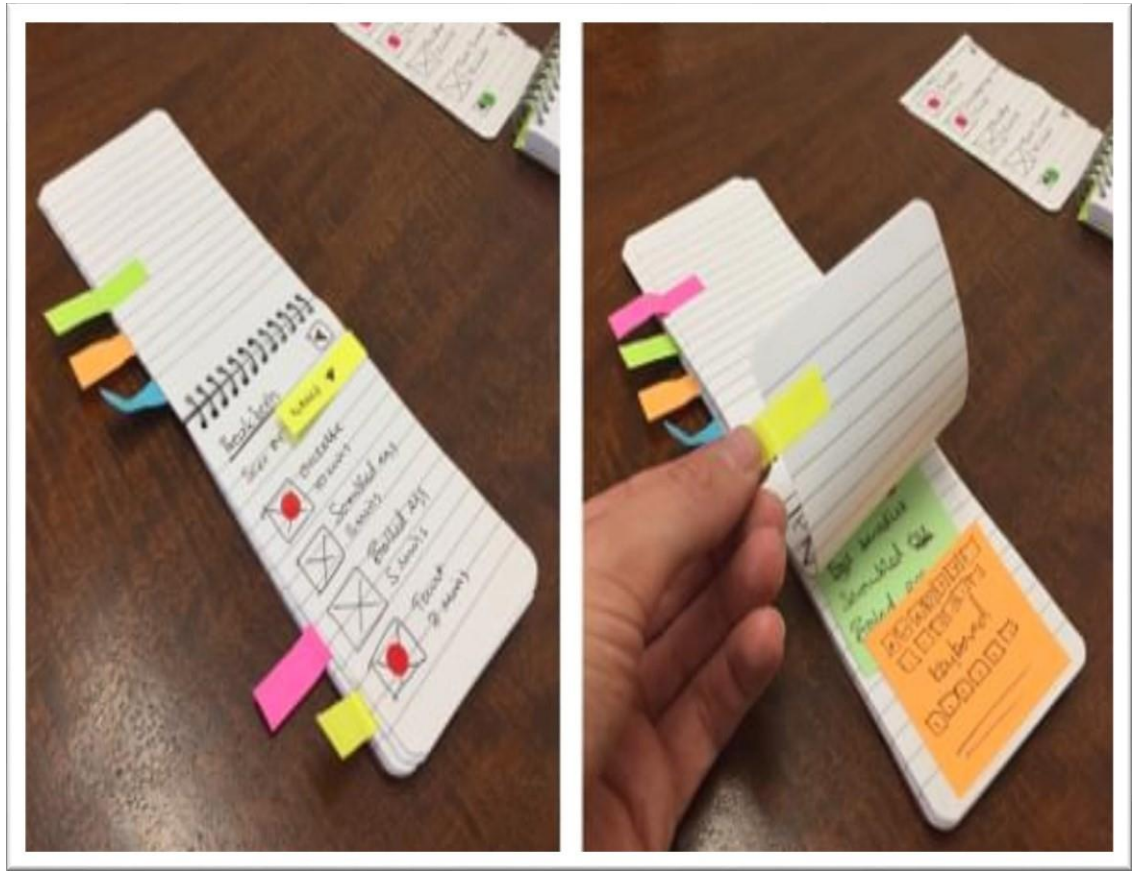
# Paper Prototype Example (2)

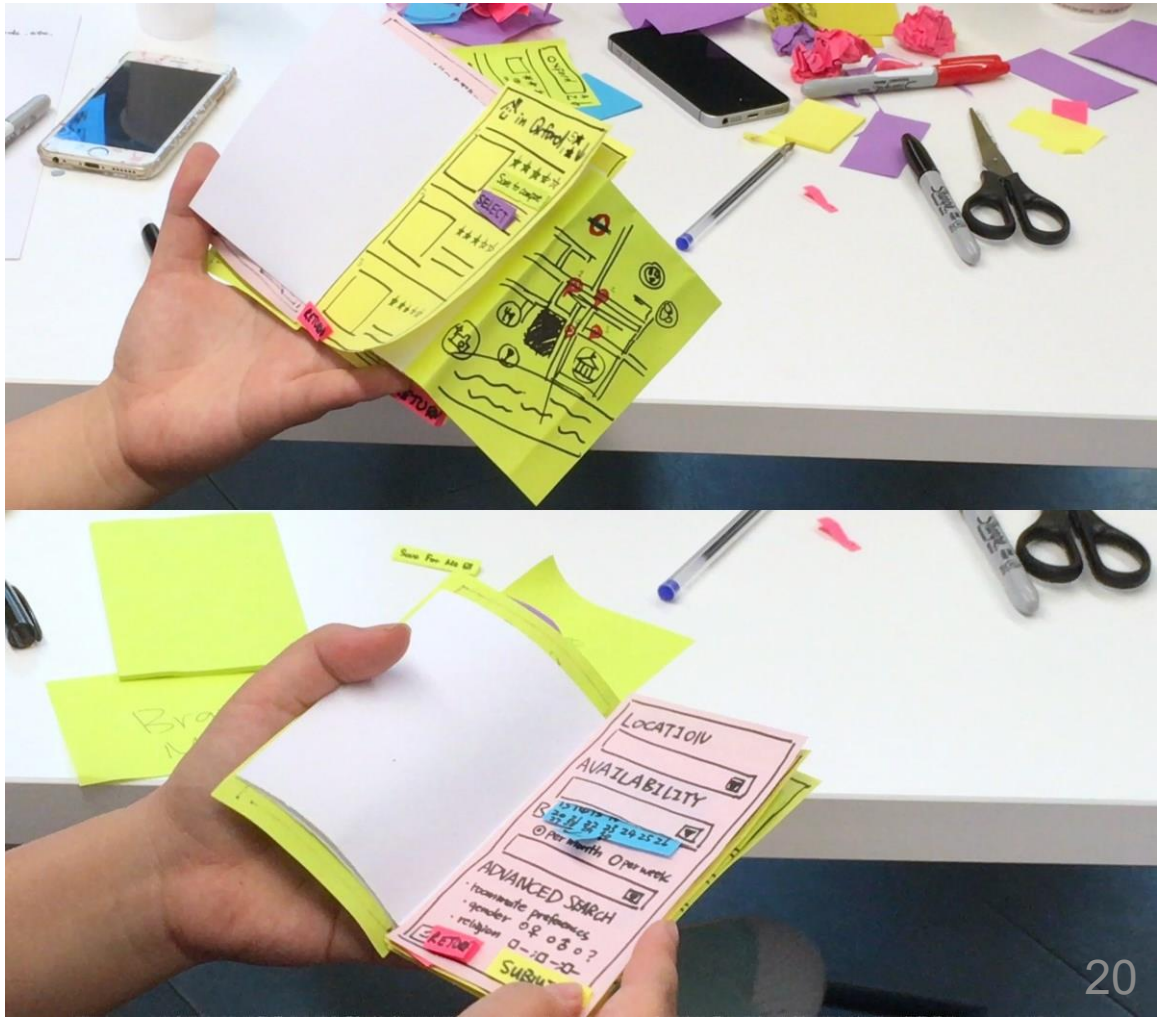


# Paper Prototype Example (3)

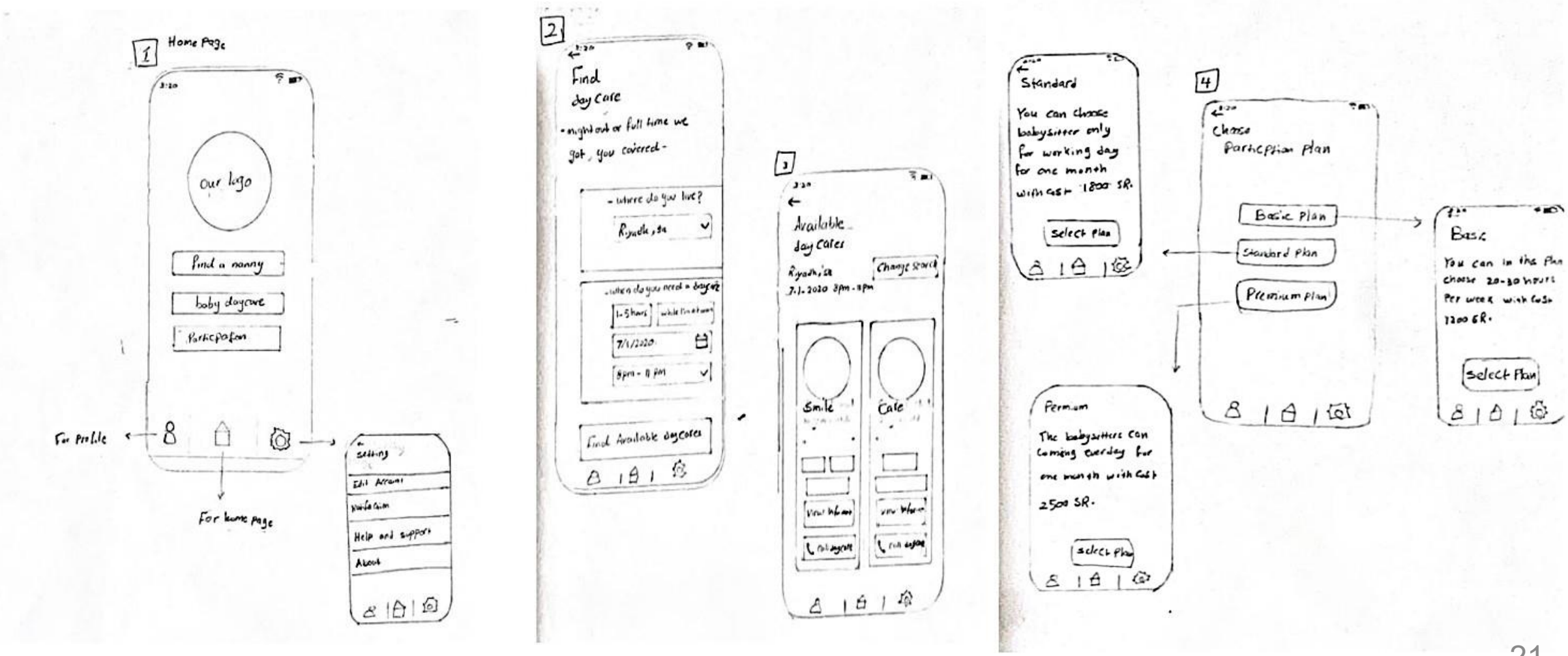


# Paper Prototype Example (4)





# Students' Samples



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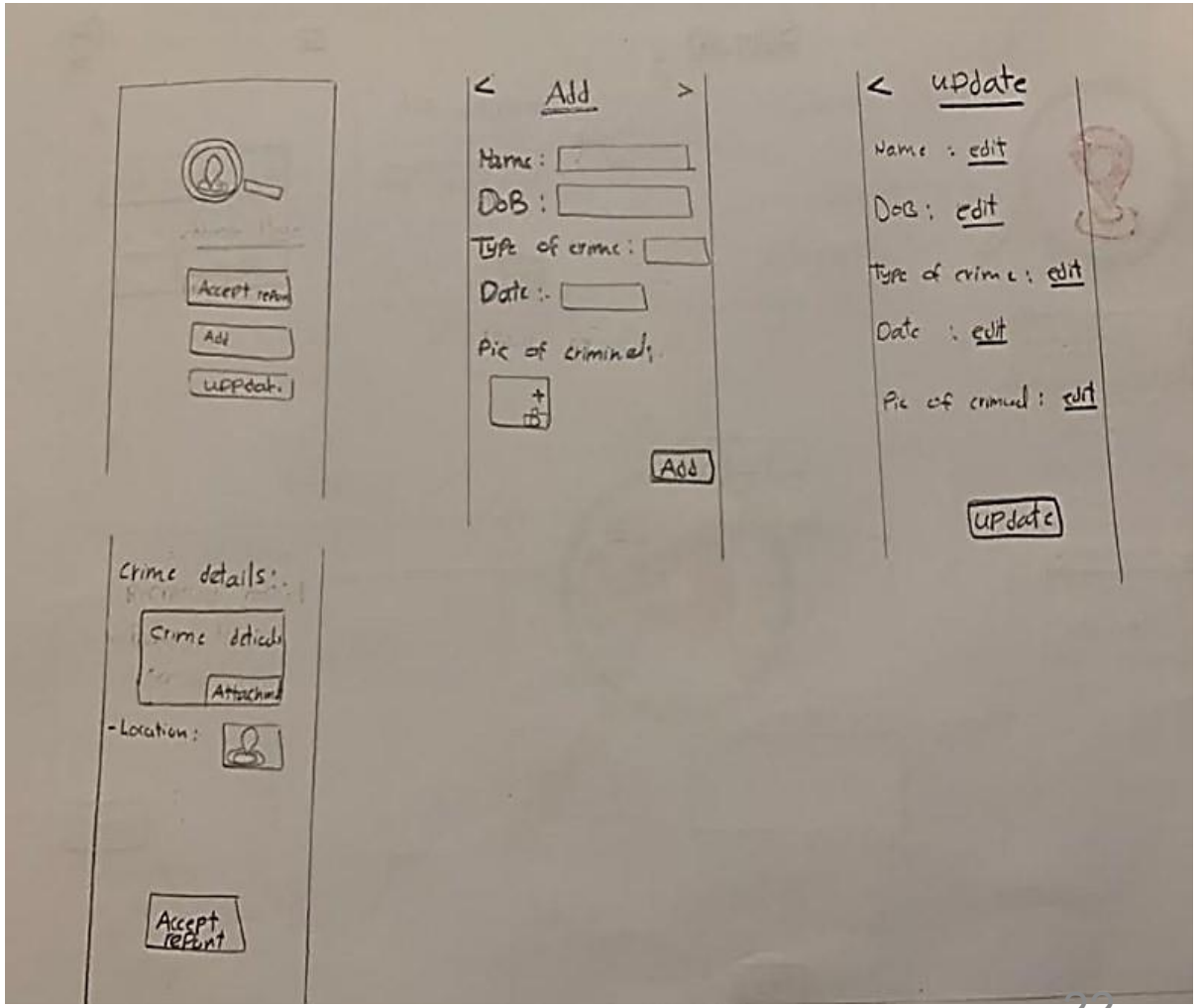

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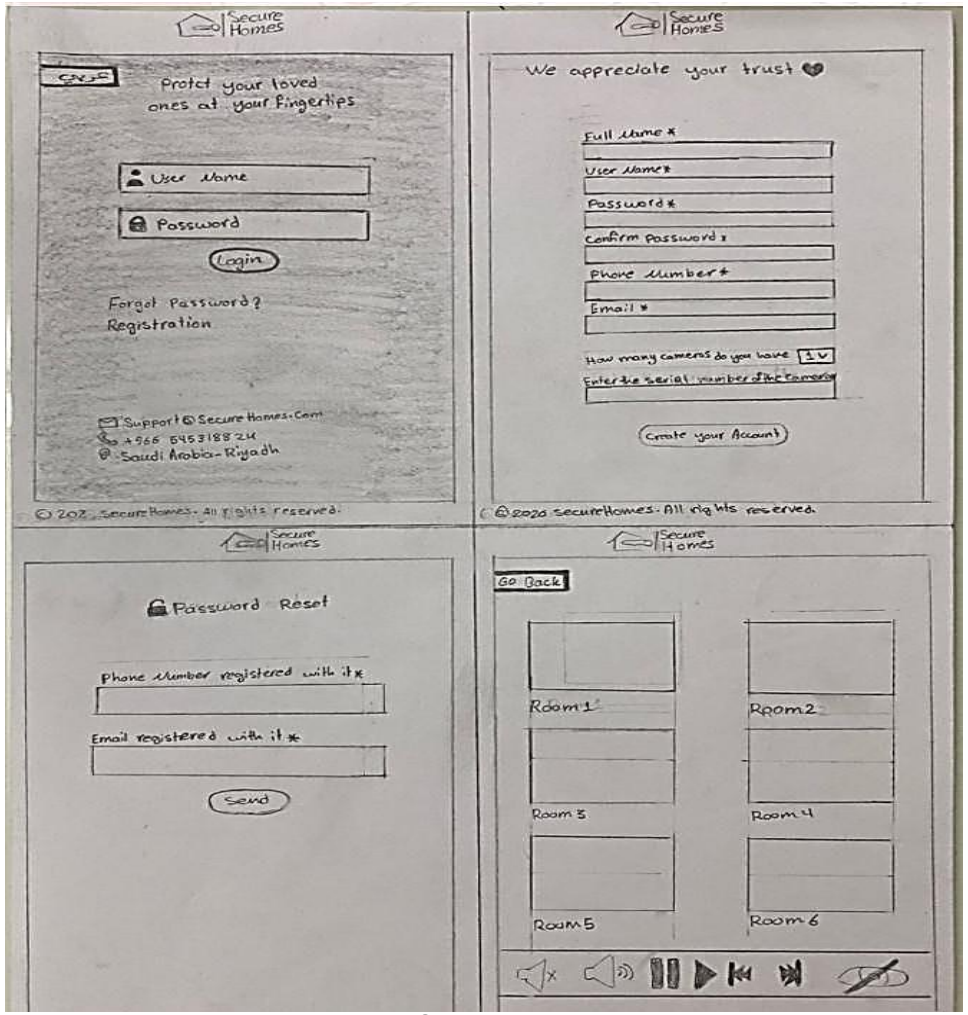
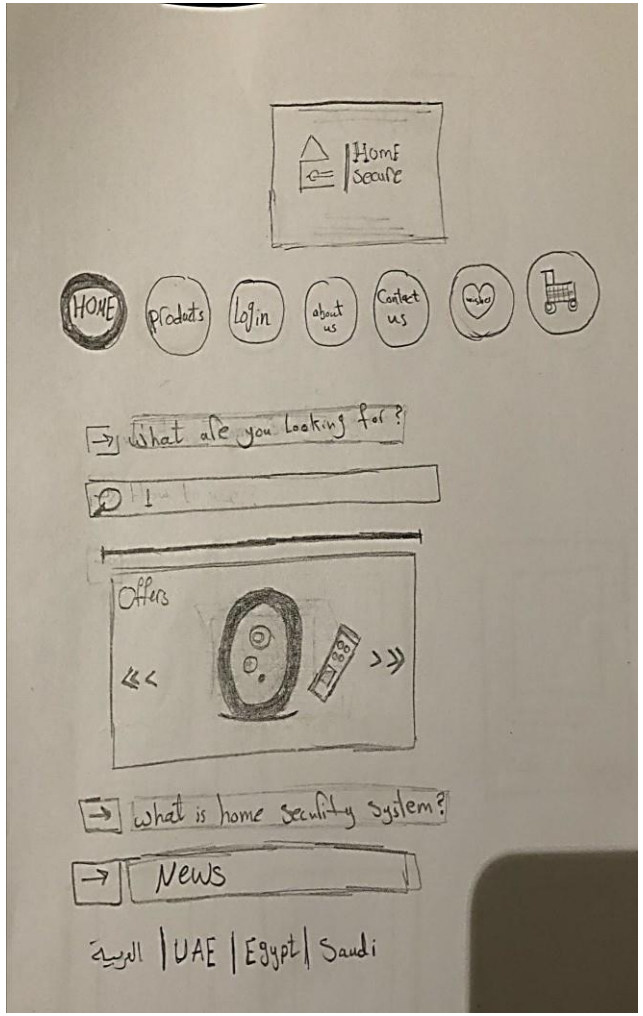
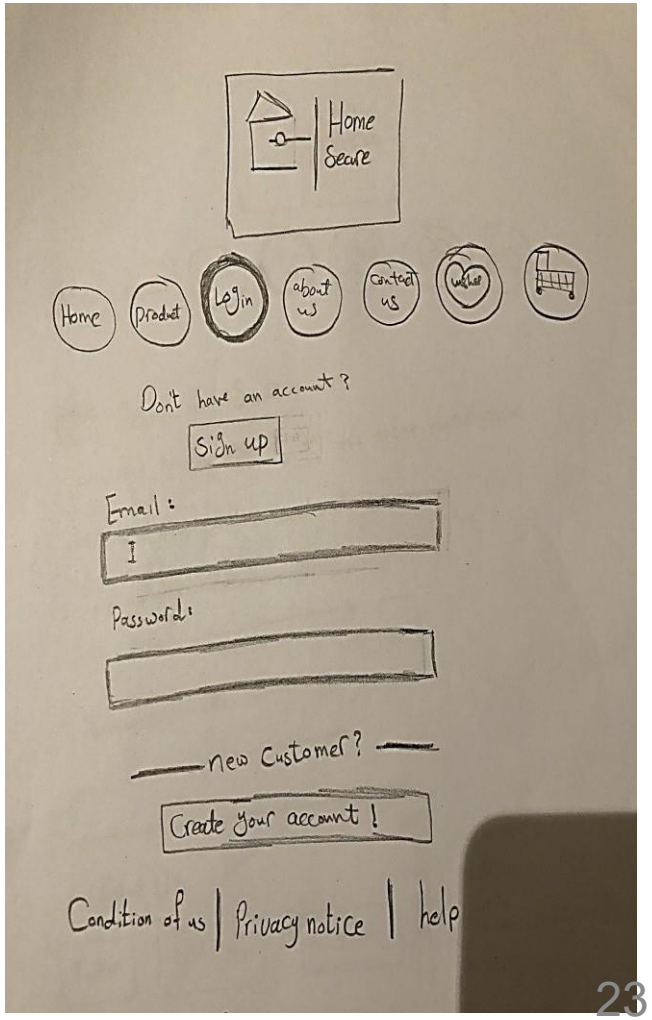
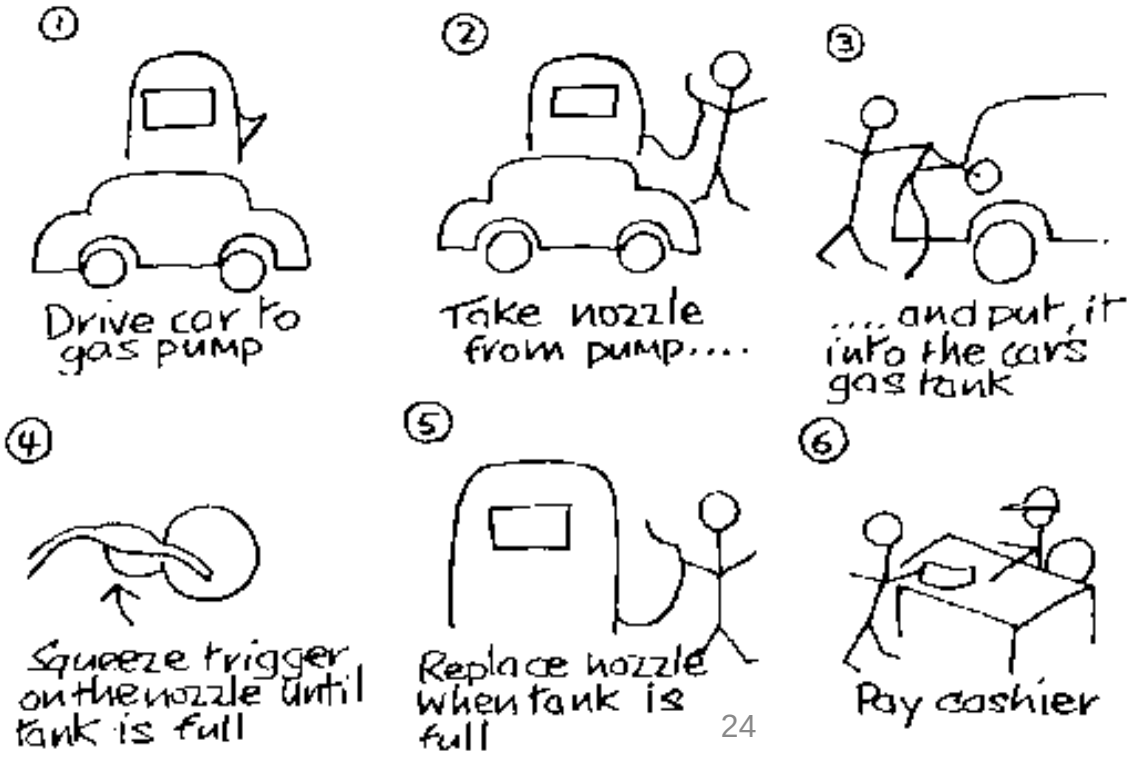


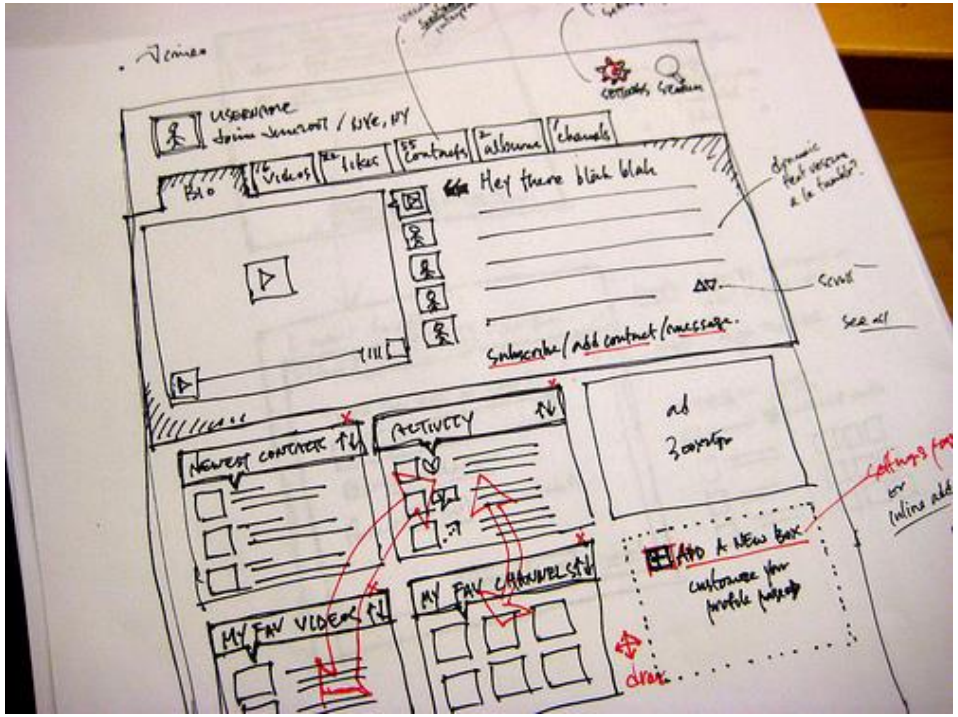
# Storyboards

- Often used with scenarios, bringing more detail, and a chance to role play
- It is a series of sketches showing how a user might progress through a task using the device
- Used early in design



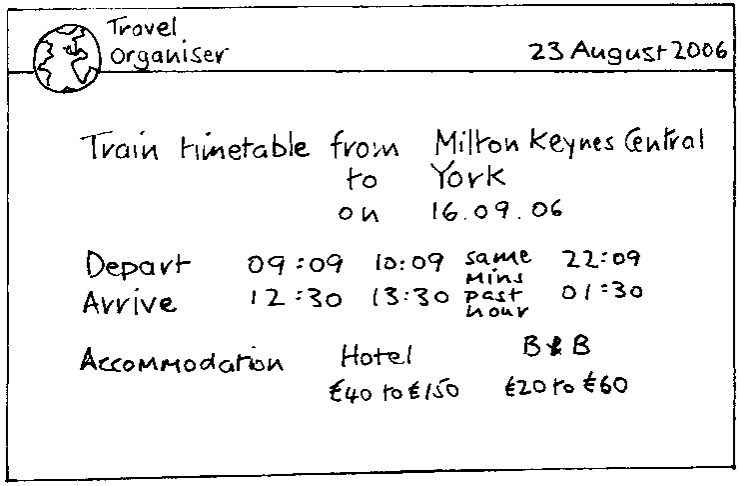
# Sketching

- Sketching is important to low-fidelity prototyping
- Don’t be inhibited about drawing ability. Practice simple symbols



# Card-based prototypes

- Index cards (3 X 5 inches)
- Each card represents one screen or part of screen
- Often used in website development


Travel Organiser
23 August 2006
Train timetable from Milton Keynes Central
to York
on 16.09.06
Depart 09:09 10:09 same mins past hour 22:09
Arrive 12:30 13:30 01:30
Accommodation Hotel €40 to €150 B&B €20 to €60

# Lab Assignment !

Project – phase 2 - *deadline at week 5* •

# End of Lab 4

# Good Luck

# 5. Good Design Principles

# Outline

- What is UI and UX
- What is User Interface
- Nielsen's 10 Heuristics
- Gestalt theory
- UI Good Design Principles
- Interaction - Models of Interaction
- Good flow tips

# What is UI and UX

- **User Interface:**

Interface used by the user to control the webpage/app, or hardware. The good designed user interface provides a friendly user experience, and allows the user to interact with the software/hardware in a natural and intuitive way.

- **User Interface Design:**

Is the designing process for the user interface that includes:

*buttons, text fields, checkboxes, radio buttons, dropdown lists, navigation bar, etc.*

- **User Experience:**

Is the process of enhancing user satisfaction by improving the usability and accessibility of the webpage/app.

# What is User Interface

- System users often judge a system by its **interface rather than its functionality**
- A poorly designed interface can cause a user to make **catastrophic errors**
- Poor user interface design is the reason why so many software systems are **never used**

**Graphical user interfaces:**

Most users of business systems interact with these systems through graphical interfaces although, in some cases, legacy text-based interfaces are still used

# 10 Usability Heuristics for User Interface Design

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# Nielsen's 10 Heuristics

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

# 1. Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

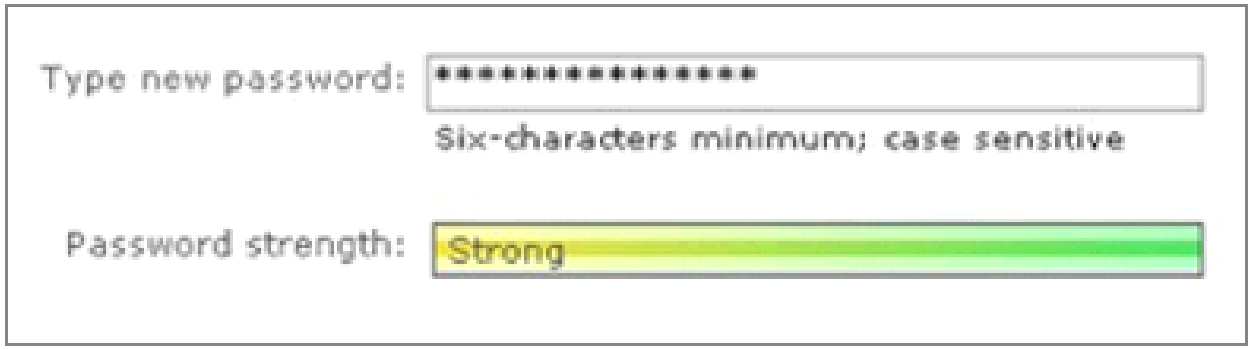


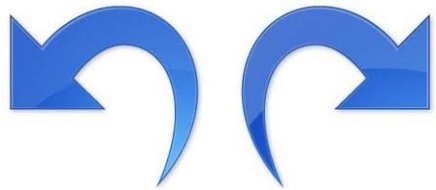

Figure 1.1: Password strength is shown as the password is entered (e.g. Windows Live Account)

# 2. Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system- oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

# 3. User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.



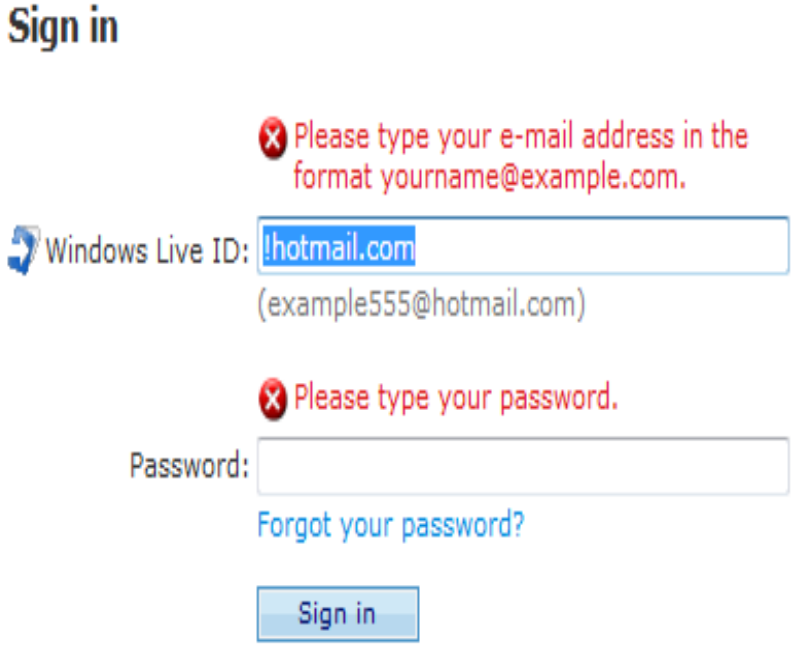
# 4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Word, Excel, and PowerPoint all use the same style toolbar with the same primary menu options: Home, Insert, Page Layout… Consistency results in efficiency

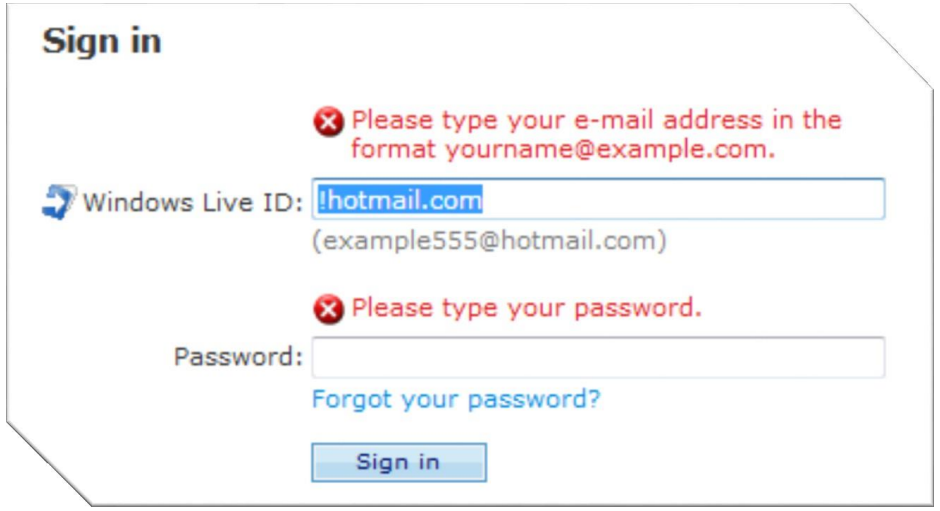
# 5. Error prevention

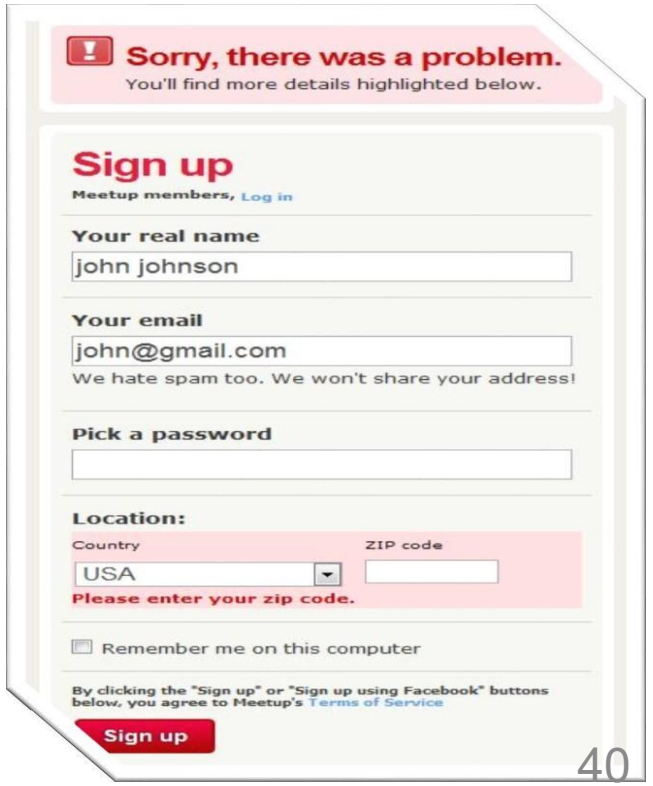
Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.



# 6. Help users recognize, diagnose, and recover from errors

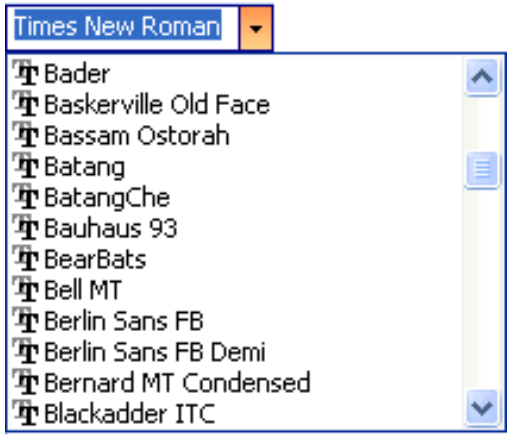
Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

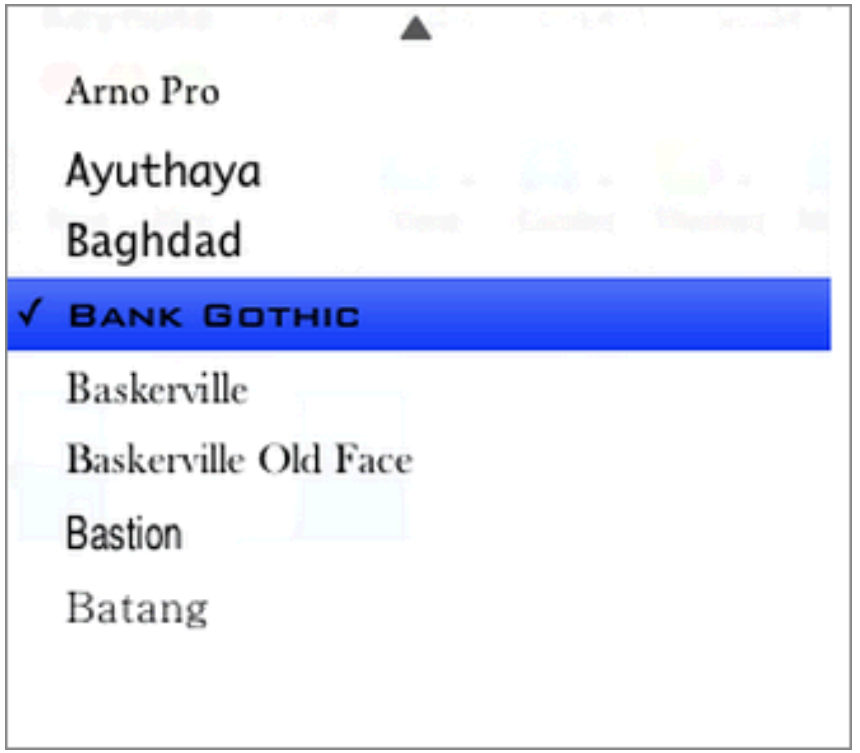




Sorry, there was a problem.
You'll find more details highlighted below.
Sign up
Meetup members, Log in
Your real name
john johnson
Your email
john@gmail.com
We hate spam too. We won't share your address!
Pick a password
Location:
Country
ZIP code
USA
Please enter your zip code.
Remember me on this computer
By clicking the "Sign up" or "Sign up using Facebook" buttons below, you agree to Meetup's Terms of Service
Sign up

# 7. Recognition rather than recall

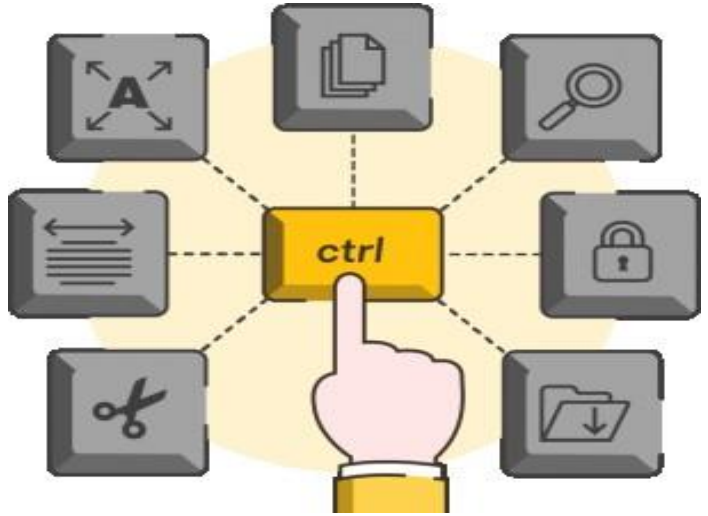
Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.



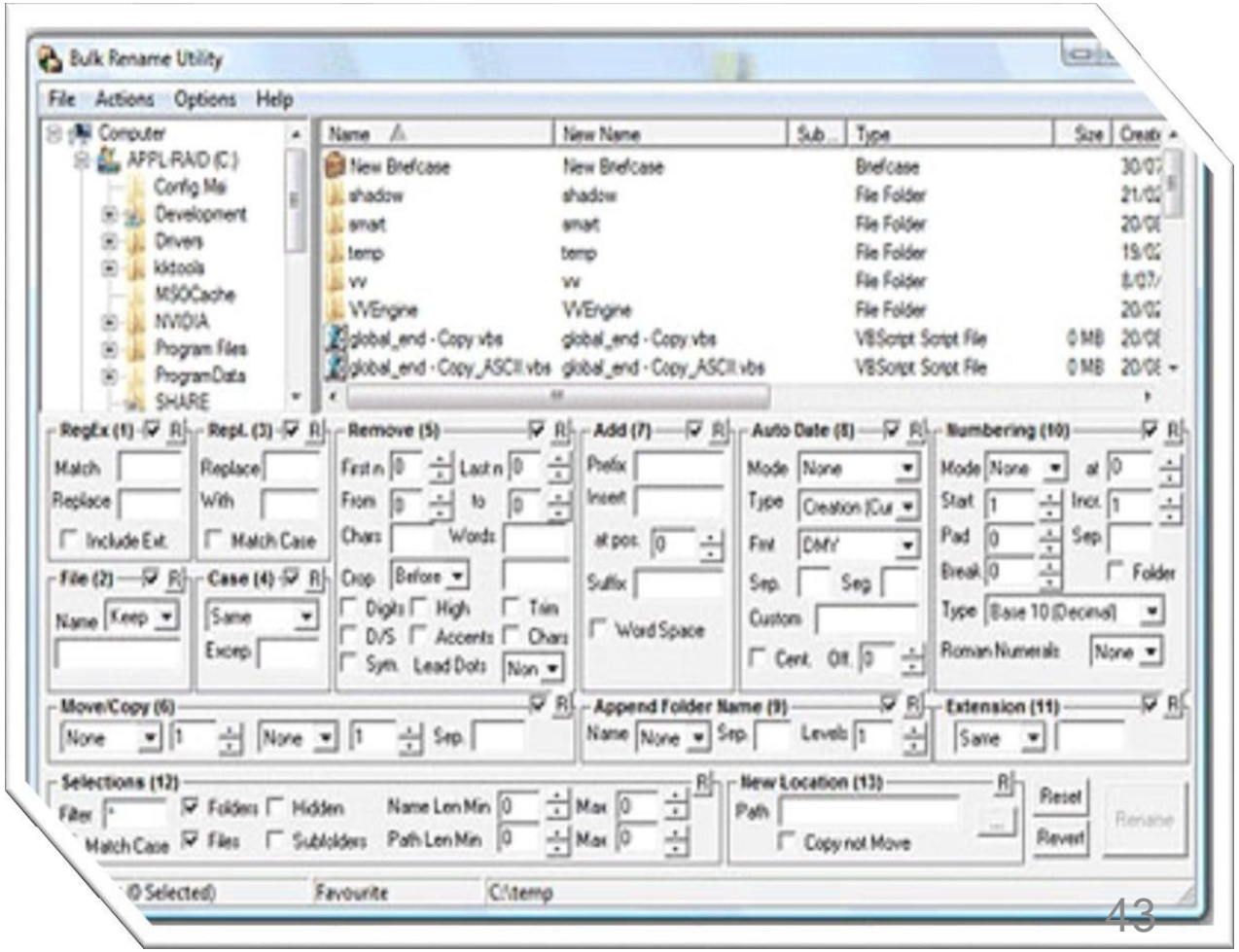
# 8. Flexibility and efficiency of use

Accelerators (like short keys) -- unseen by the novice user -- may  often speed up the interaction for the expert user such that the  system can cater to both inexperienced and experienced users.
Allow users to tailor frequent actions.



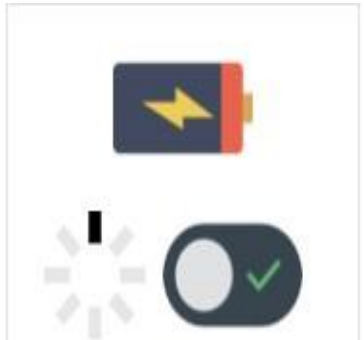
# 9. Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.



# 10. Help and documentation

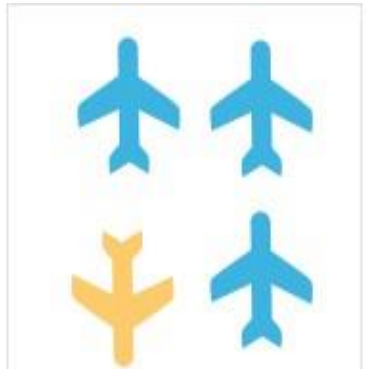
Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.



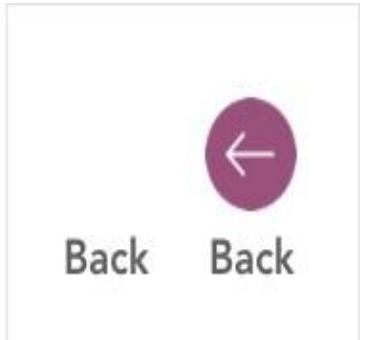
Visibility of System Status

Match system to real world

User Control and Freedom



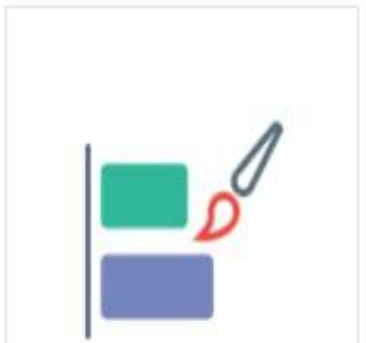
Consistency and Standards




Recognition rather than Recall

Error Prevention

Flexibility and Efficiency of Use

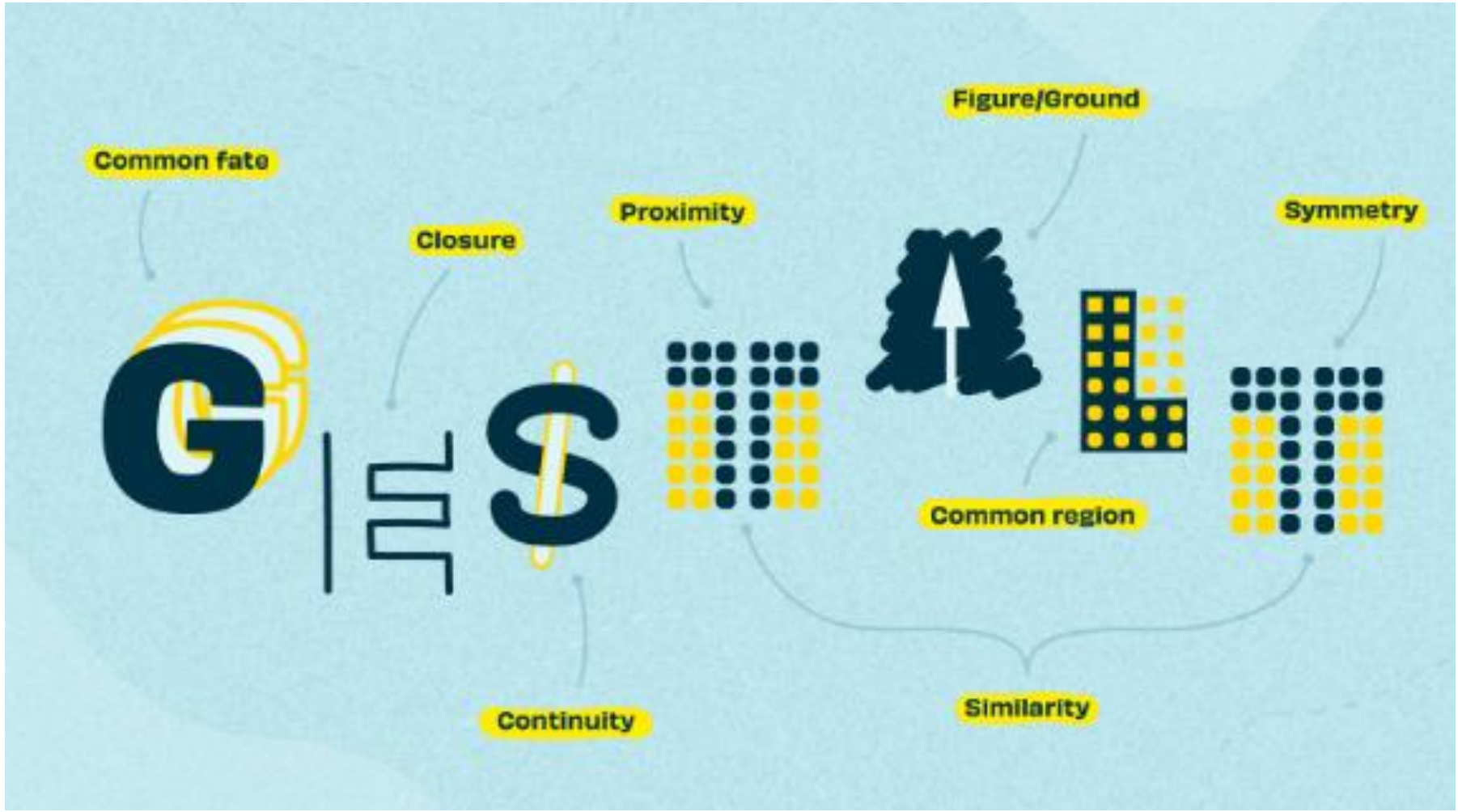


Aesthetic & Minimal Design

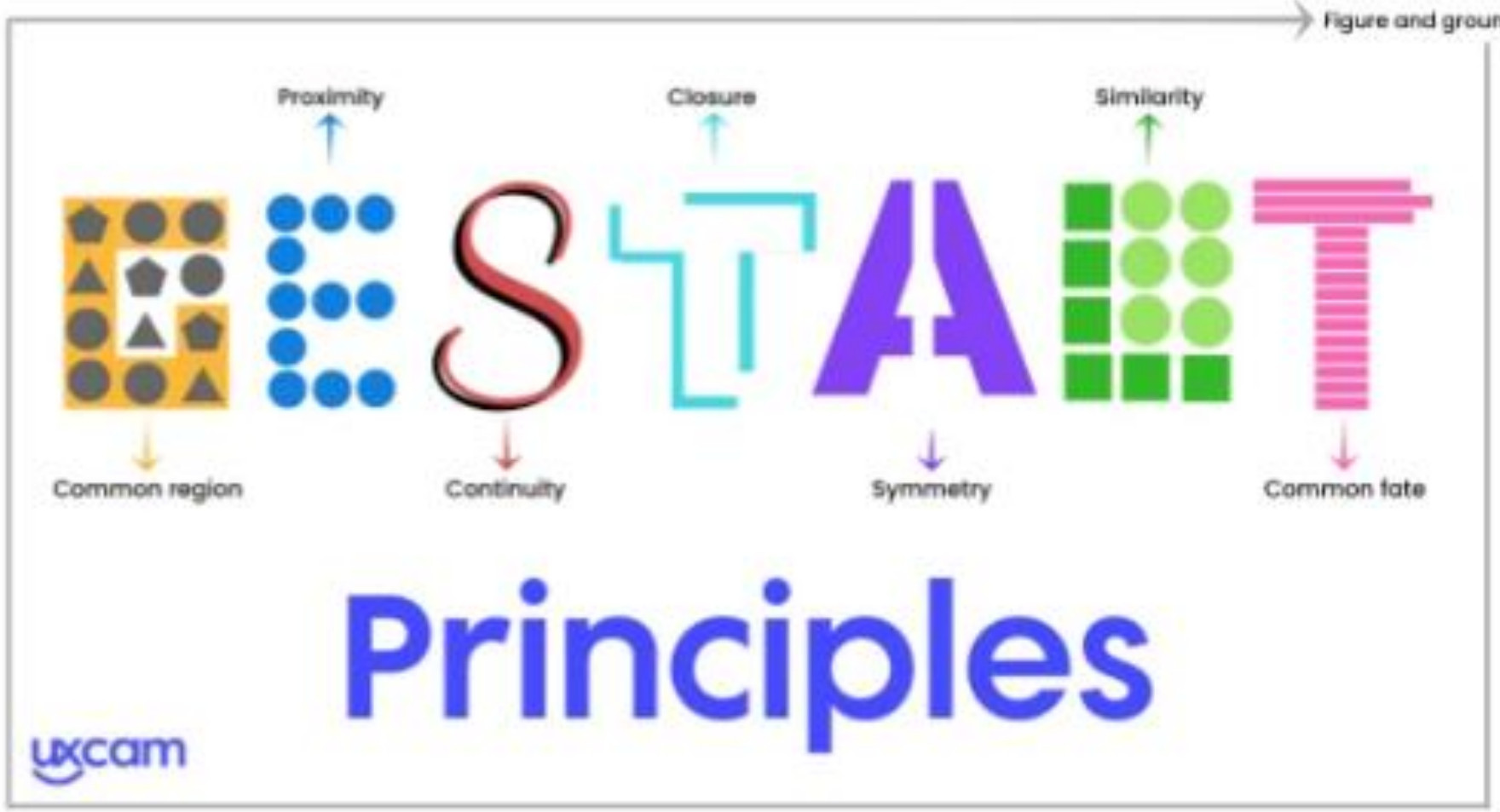
Help Users with Errors

Help and Documentation

# Gestalt theory



# Gestalt theory



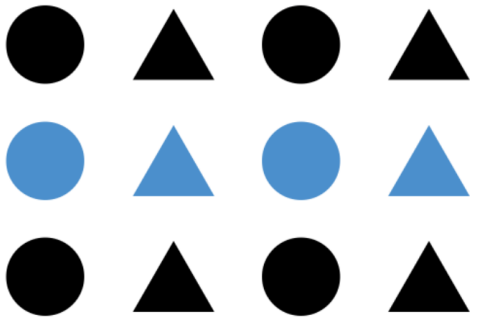
# Gestalt theory الصورة الكاملة

Here are the gestalt principles that we'll be covering:

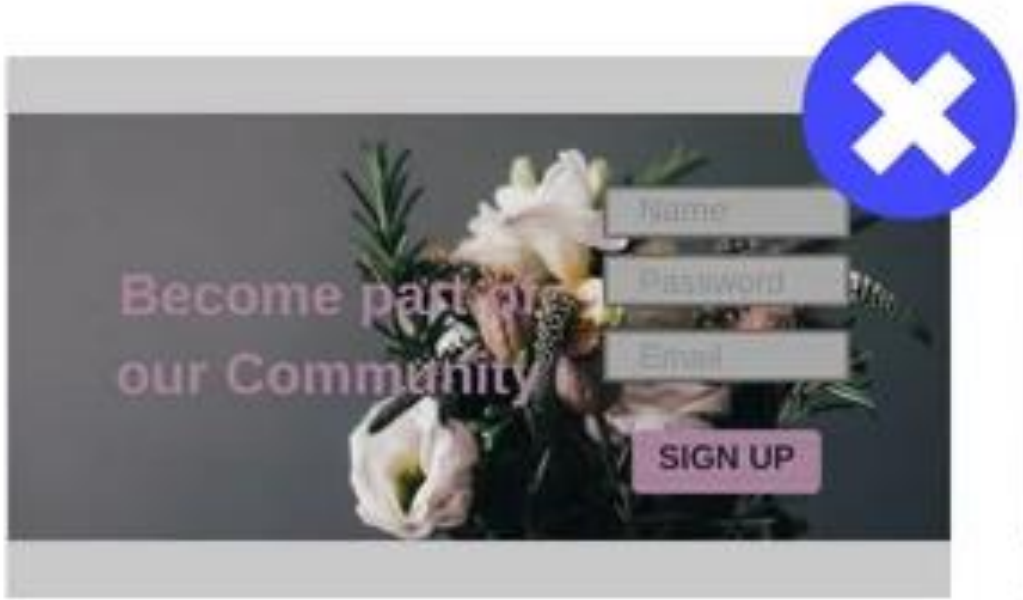
- Similarity
- Figure/Ground
- Proximity
- Closure
- Common region
- Symmetry and order
- Continuity
- Common fate

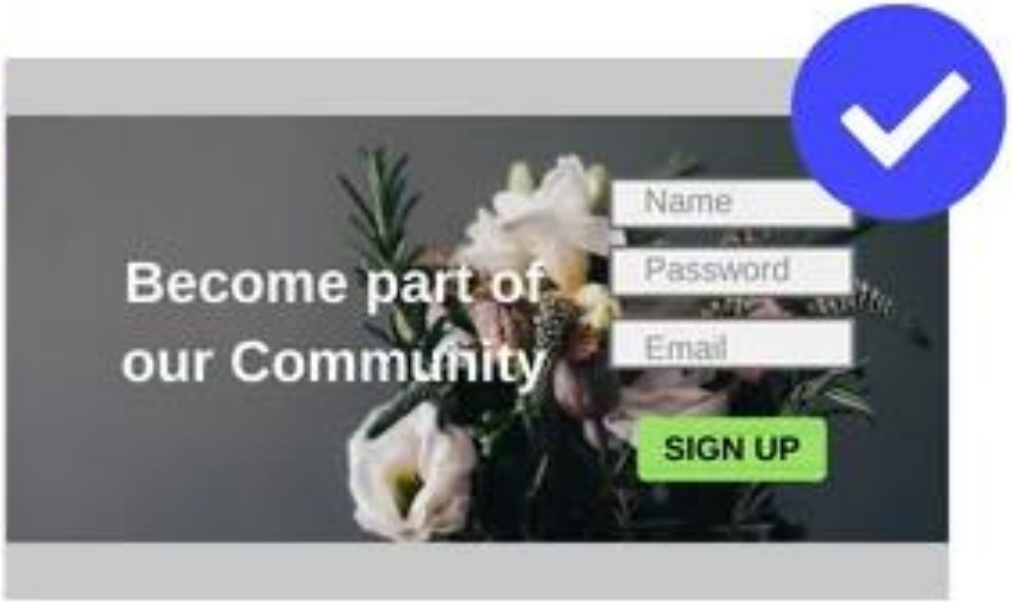
# Gestalt theory -Similarity

Elements that share similar characteristics are perceived as more related than elements that don't share those characteristics.

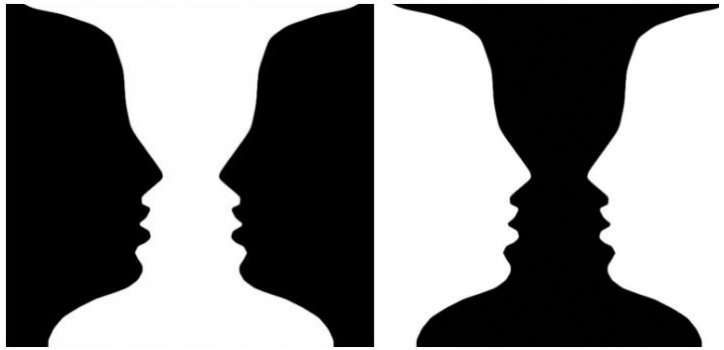


# Gestalt theory- Figure/Ground

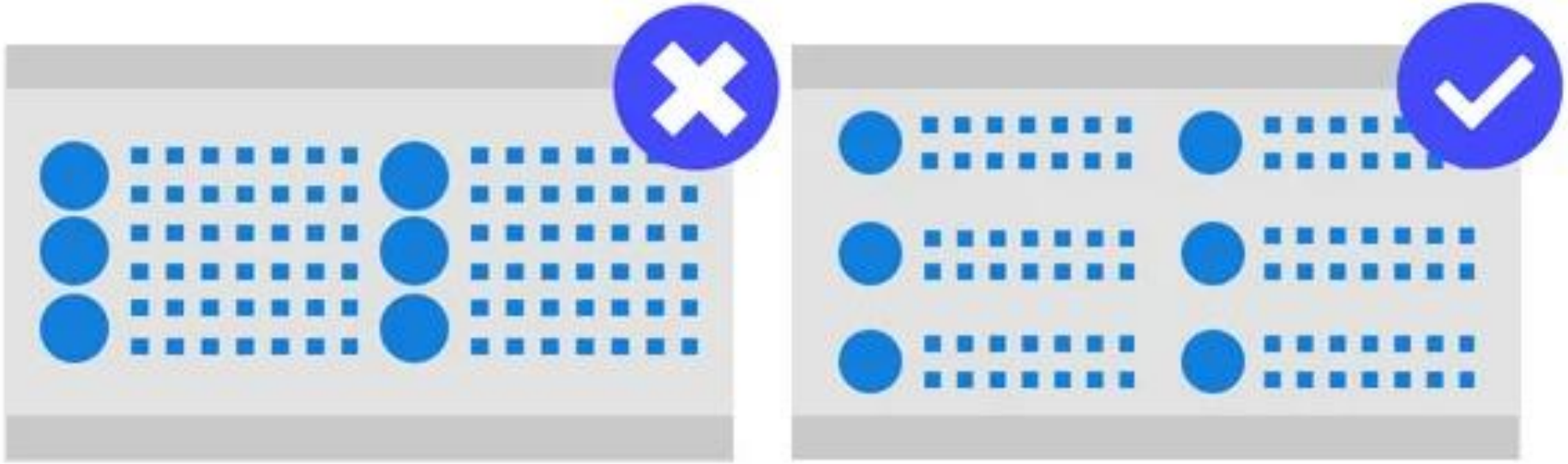



Elements are perceived as either figure (the element in focus) or ground (the background on which the figure rests



# Gestalt theory- Proximity



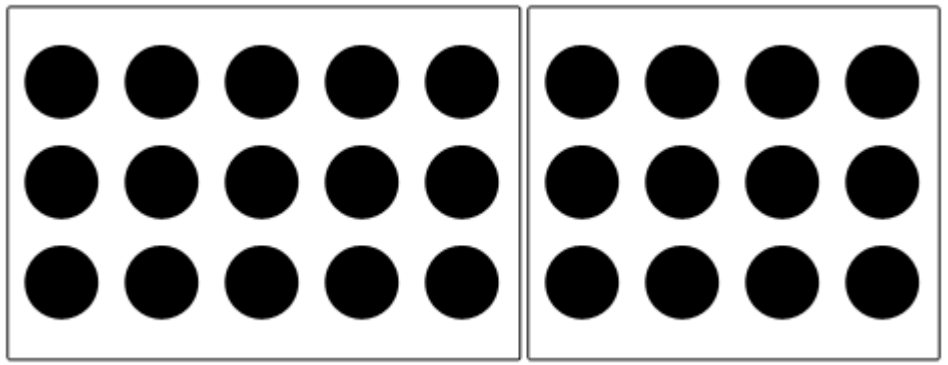
Objects that are closer together are perceived as more related than objects that are further apart

# Gestalt theory- Closure

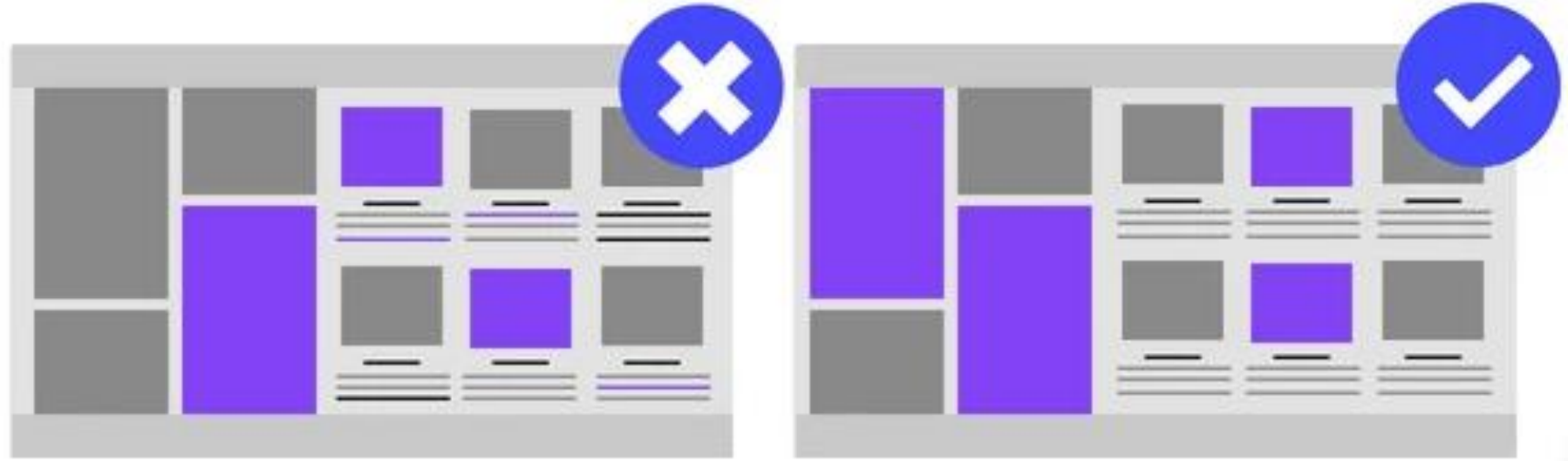
When seeing a complex arrangement of elements, we tend to look for a single, recognizable pattern

# Gestalt theory- Common region

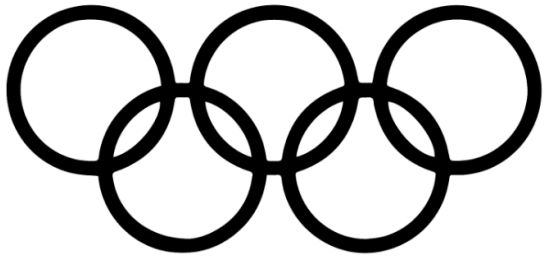
Elements are perceived as part of a group if they are located within the same closed region



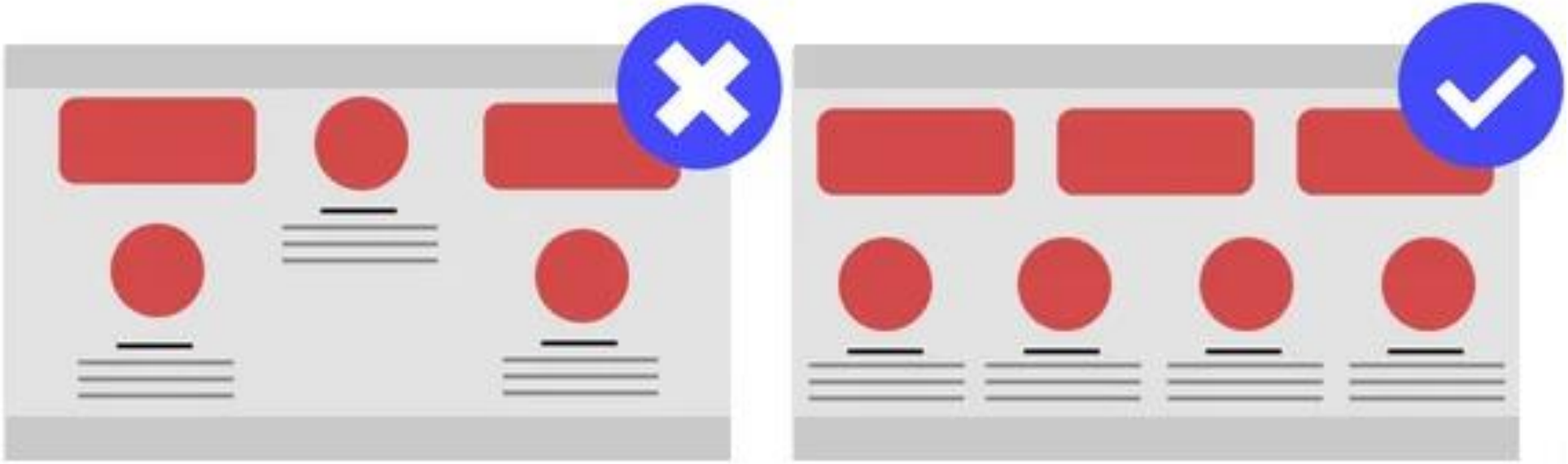
# Gestalt theory- Symmetry and order



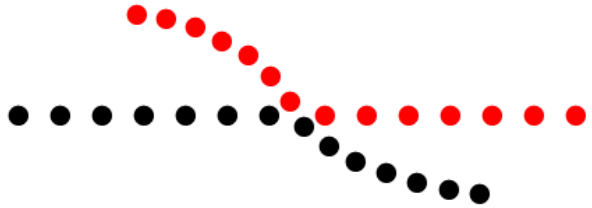
People tend to perceive objects as symmetrical shapes that form around their center



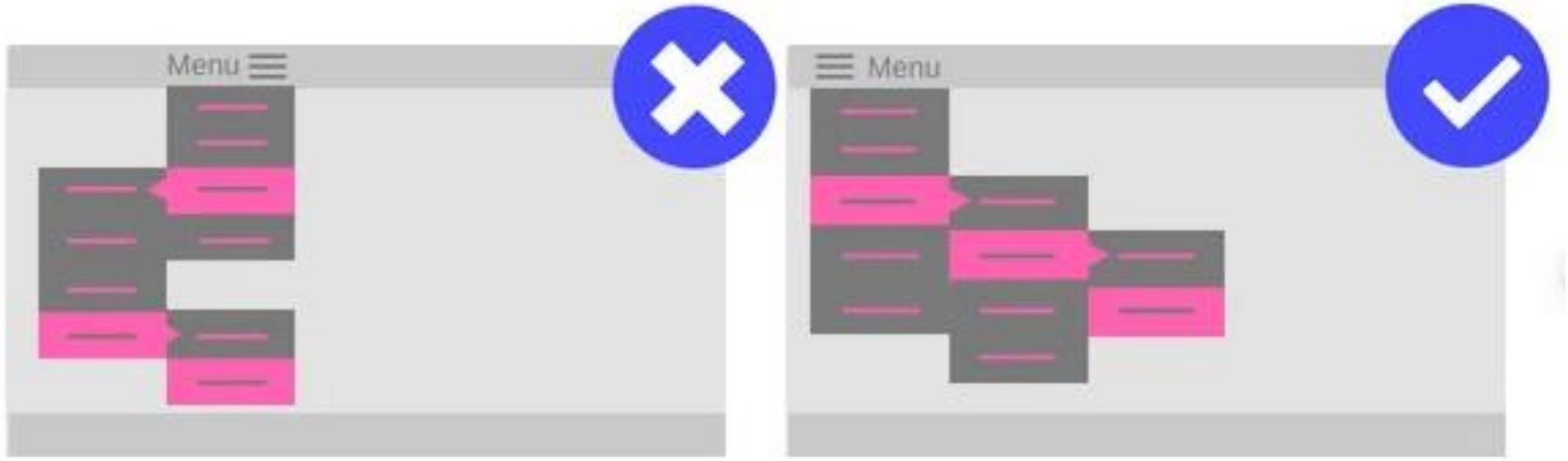
# Gestalt theory- Continuity



Elements arranged on a line or curve are perceived as more related than elements not on the line or curve



# Gestalt theory- Common fate




Elements that move in the same direction are perceived as more related than elements that are stationary or that move in different directions

# Good design principles

- **Consistency:** The consistent design creates a good impression on the user's mind.
- Consistent navigation can guide users to find their most needed information quickly and effectively.
- Consistent operation design can make users quickly learn various product features.

- **Interaction:** The primary purpose of an interface is to allow people (users) interacting with the world/system effectively through the designed interface.

- **Alignment:** Coordinated placement of UI elements is alignment.
- It makes it easy for the user to scan the content and reduces visual complexity.

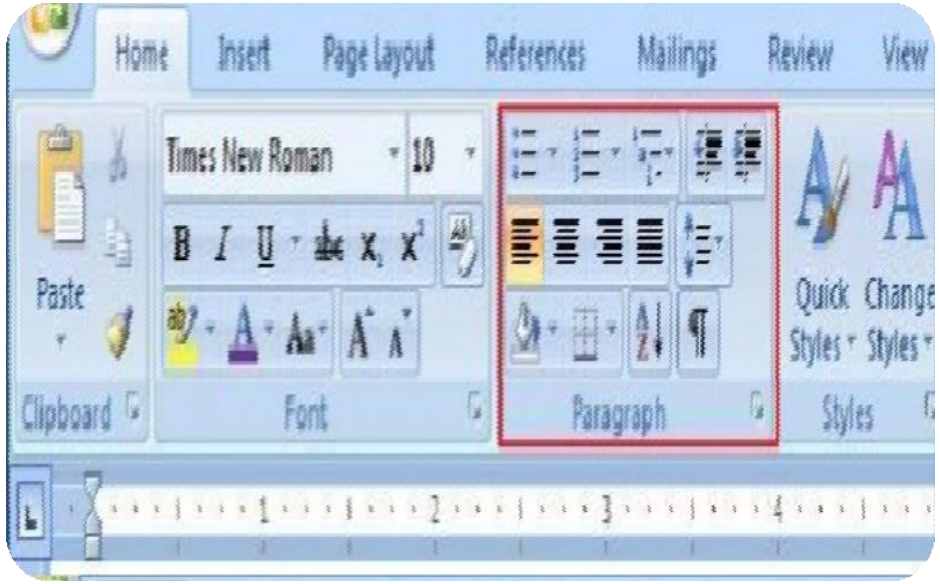
**الاتساق – التفاعل – المحاذاة – التجميع – التوازن – التدفق**

# Good design principles

- **Grouping:** Grouping is when logically related elements have a clear visual relationship.
- Groups make it easy for the user to understand and focus on related items.

- **Balance:** A layout is considered as balanced when its contents are evenly distributed across the surface.
- A common balance problem is having too much content on the left side of the window.

- **Flow:** A layout has flow when users are guided smoothly and naturally to find and use UI elements.




الاتساق – التفاعل – المحاذاة – التجميع – التوازن – التدفق

# The Interaction

# What is interaction?

**Communication**

**user** **system**

# The Interaction

1. interaction models
   - translations between user and system
2. ergonomics
   - physical characteristics of interaction
3. interaction styles
   - the nature of user/system dialog
4. context
   - social, organizational, motivational

# Models of Interaction

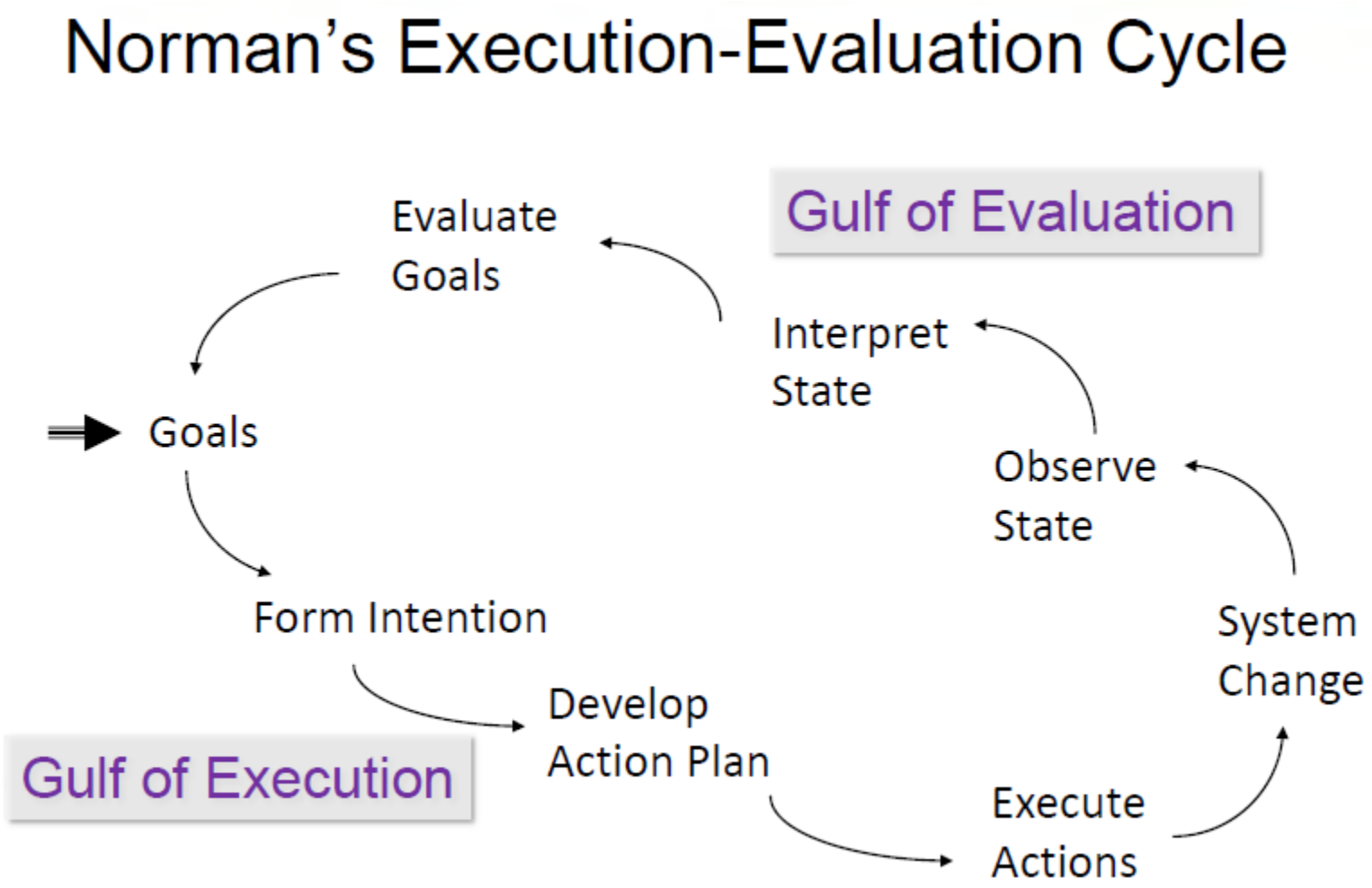
Interaction involve two complex participants: Systems and users.

In order to allow successful interaction, Interfaces must translate the communication between systems and users.

Why using Model?

- Can help to understand complex systems and complex behavior
- Can help to understand what is going on in the interaction
- Identify the likely root of difficulties

# Donald Norman's model



# Donald Norman's model

## Bridging the Gulfs

**Gulf of Execution**: "How do I do it?"

Commands and mechanisms need to match the goals, thoughts, and expectations of a person

**Gulf of Evaluation**: "What does it mean?"

Output needs to present a view of the system that is readily perceived, interpreted, and evaluated

People build mental models to anticipate and interpret system response to their actions

**What** can I do? How do I do it?

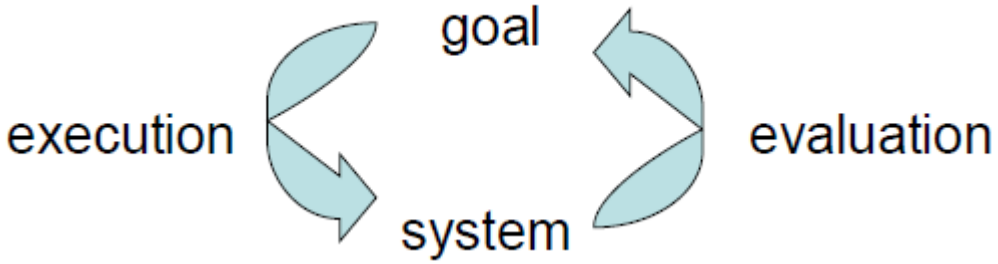
What result will it have? What is it telling me?

# Donald Norman's model

## Norman's Execution-Evaluation Cycle

Norman uses this model to demonstrate why some interfaces causes problem to their users.

1. Establish the goal.
2. Form the intention.
3. Specify the action sequence.
4. Execute the action sequence.
5. Perceive the system state.
6. Interpret the system state.
7. Evaluate the system state with respect to the goals and intentions.



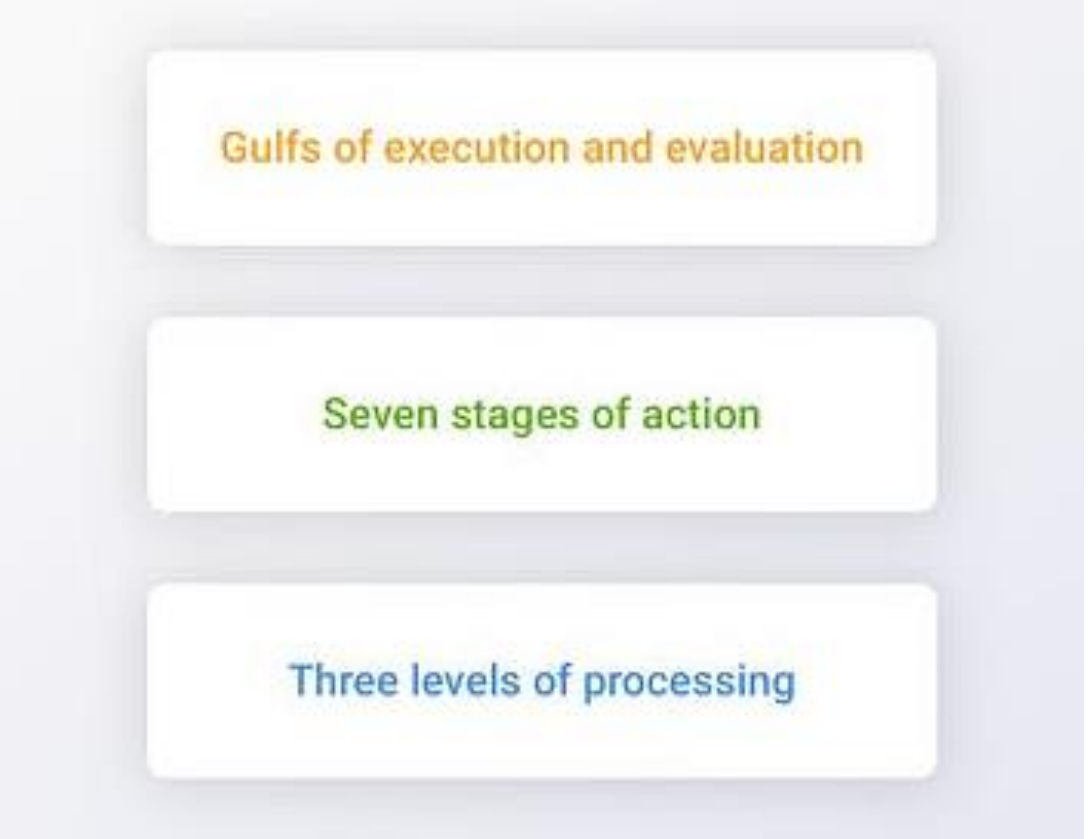

Norman's model concentrates on user's view of the interface

# Donald Norman's model

**The Action Cycle**

According to Norman, when people engage with design, they undergo an **Action Cycle** of cognition, emotion, and behavior. The said process contains various layers of interaction between a person and a product or an item. Within it are three components:

1.The Gulfs of Execution and Evaluation
2.The Seven Stages of Action
3.The Three Levels of Processing



# Donald Norman's model

**The Gulfs of Execution and Evaluation**

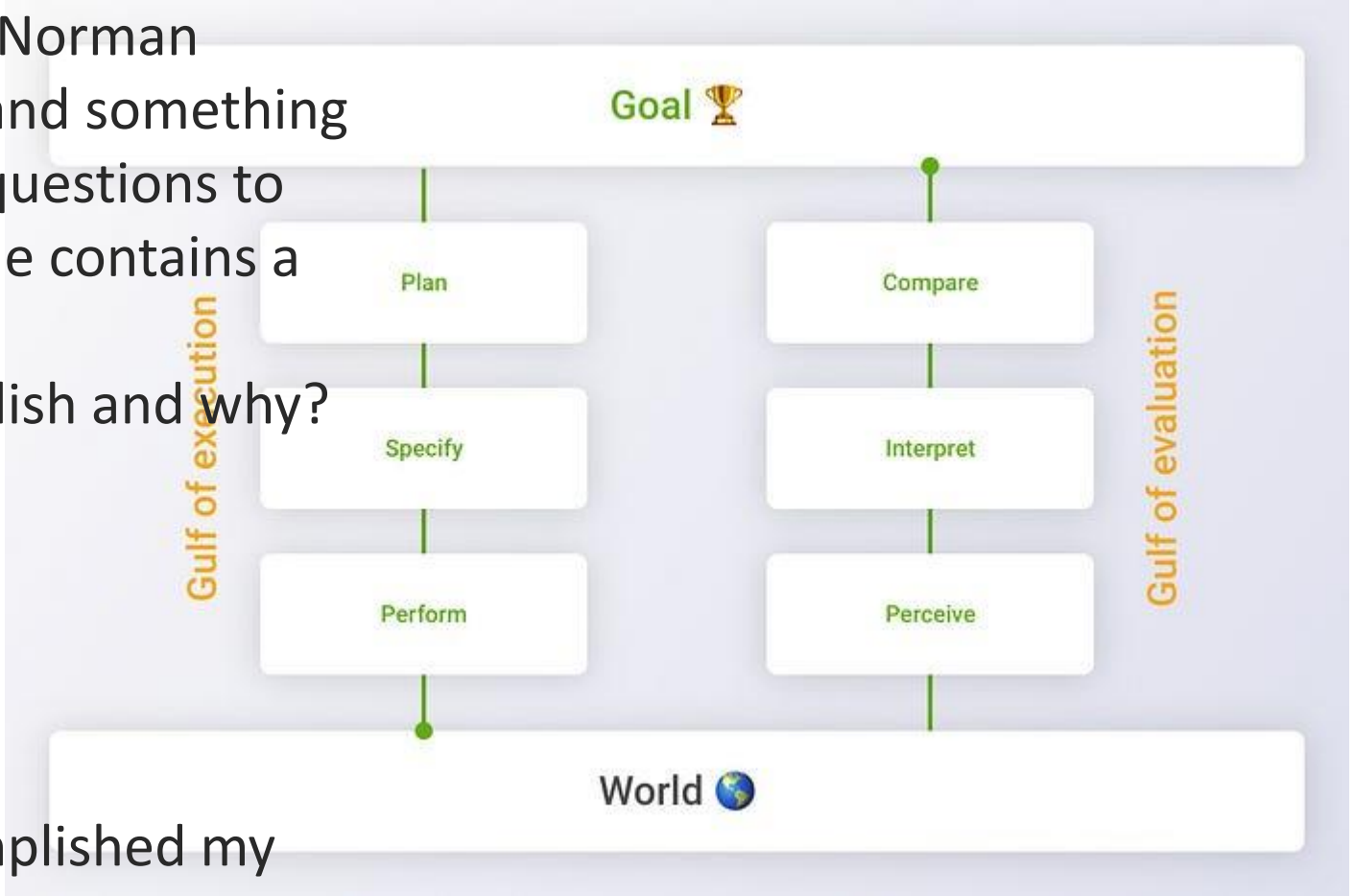
The first component of Norman's Action Cycle consists of two parts to an action: **Execution** (figuring out how to do something) and **Evaluation** (figuring out what you've just done). The two gulfs situate between the **goal** (what the person wants to accomplish) and the **world** (the physical state — everything they see and perceive).

# Donald Norman's model

**The Seven Stages of Action**

The second component of the Action Cycle consists of **The Seven Stages of Action**, which Norman describes as a "valuable design tool" and something that can provide a "basic checklist of questions to ask." Each stage within the Action Cycle contains a fundamental question:

1. **The goal**: what do I want to accomplish and why?
2. **Plan**: how can I do it?
3. **Specify**: what options do I have?
4. **Perform**: what can I do now?
5. **Perceive**: what just happened?
6. **Interpret**: what does it mean?
7. **Compare**: is this okay? Have I accomplished my goal?



# Donald Norman's model

**The Seven Stages of Action**

Now let's revisit the car parking scenario; this time, you're going to apply The Seven Stages of Action:

- **The goal**: use the ticket machine to pay for your parking space
- **Plan**: understand how to operate the ticket machine
- **Specify**: select the actions to enter the car registration number, insert the required amount of money, and print the ticket
- **Perform**: physically execute the specified action sequence
- **Perceive**: observe the digital display and printed ticket
- **Interpret**: the system has accepted the car details and money
- **Compare**: the printed ticket has led you to your goal.

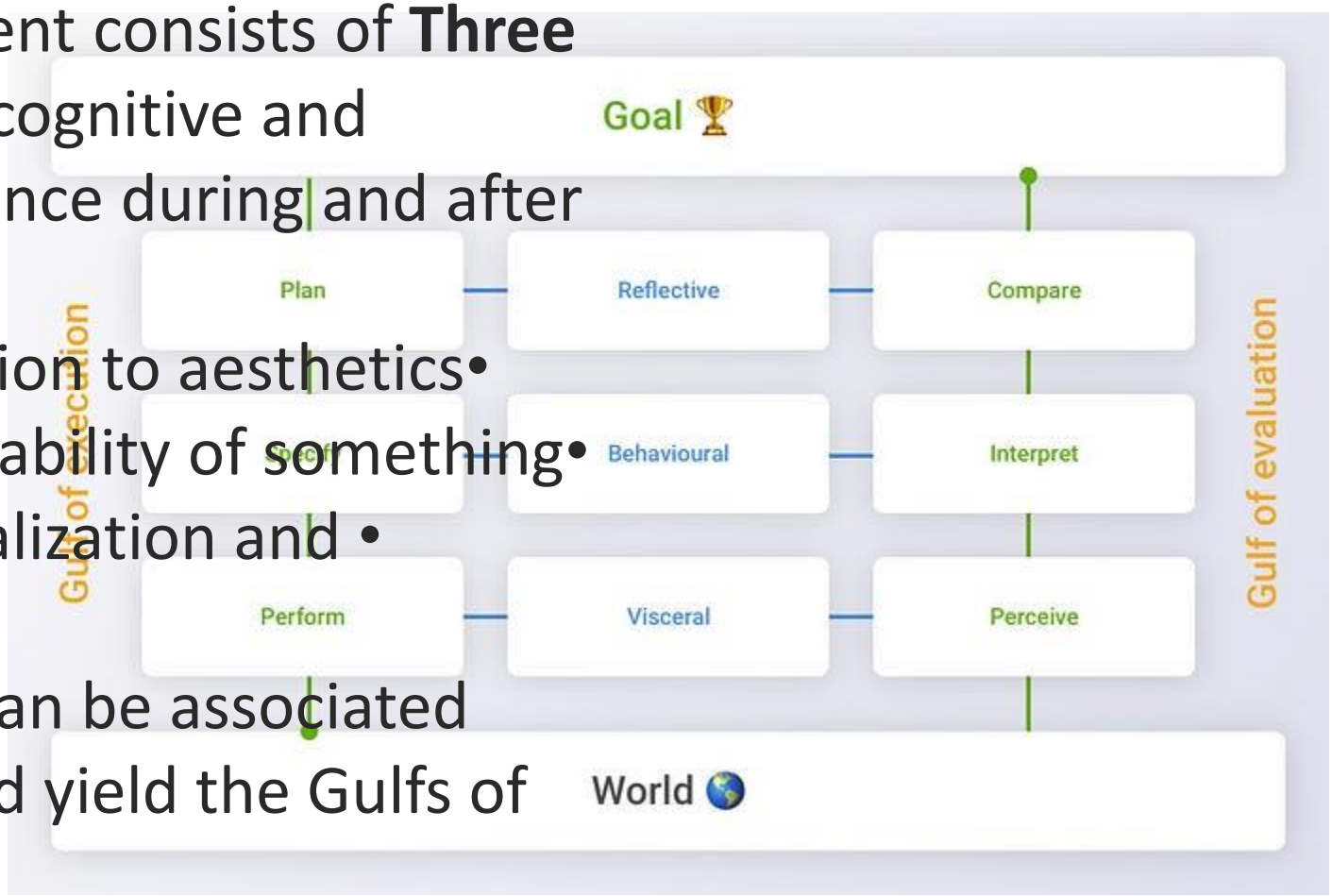
# Donald Norman's model

**Three Levels of Processing**

The Action Cycle's final component consists of **Three Levels of Processing**, which are cognitive and emotional responses we experience during and after interacting with something.

- **Visceral**: the subconscious reaction to aesthetics
- **Behavioral**: the subconscious usability of something
- **Reflective**: the conscious rationalization and intellectualization

The Three Levels of Processing can be associated with the Seven Action Stages and yield the Gulfs of Execution and Evaluation.



# Donald Norman's model

## Building the Right Model

Having the right model helps people bridge the Gulf of Execution and the Gulf of Evaluation

**How can we help people build the right models:**

Principles of user interface design to improve the quality of interface

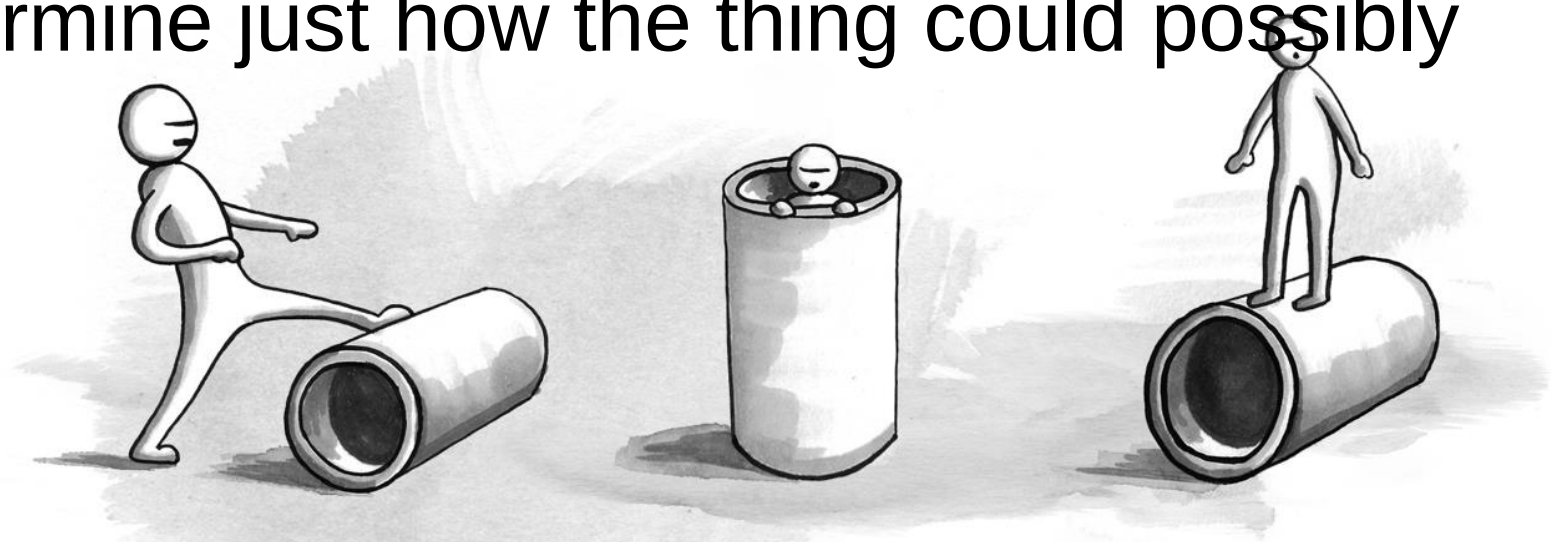
1. Affordances
2. Metaphors
3. simplicity
4. Visibility
5. feedback
6. Constraints
7. Mapping
8. Consistency
9. Modes
10. Tolerance
11. structure
12. Standardization

# Donald Norman's model

## 1. Affordances

"The term 'affordance' refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used."

Norman



يشير مصطلح Affordance إلى الخصائص المدركة والفعلية لغرض ما ، وخاصة تلك الخصائص الأساسية التي تحدد كيف يمكن استخدام هذا الغرض.
نورمان

# Donald Norman's model

## 1. Affordances

Visual clue to interaction

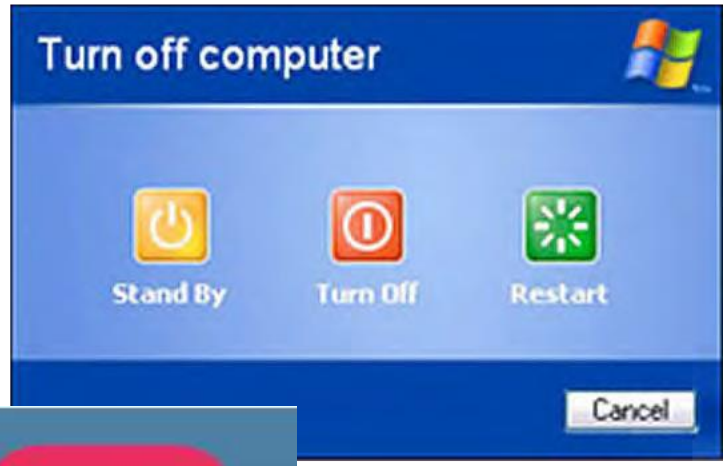
- knobs afford turning
- Handles afford grasping
- levers afford moving
- buttons afford pushing
- Chairs afford support

# Donald Norman's model

## 1. Affordances

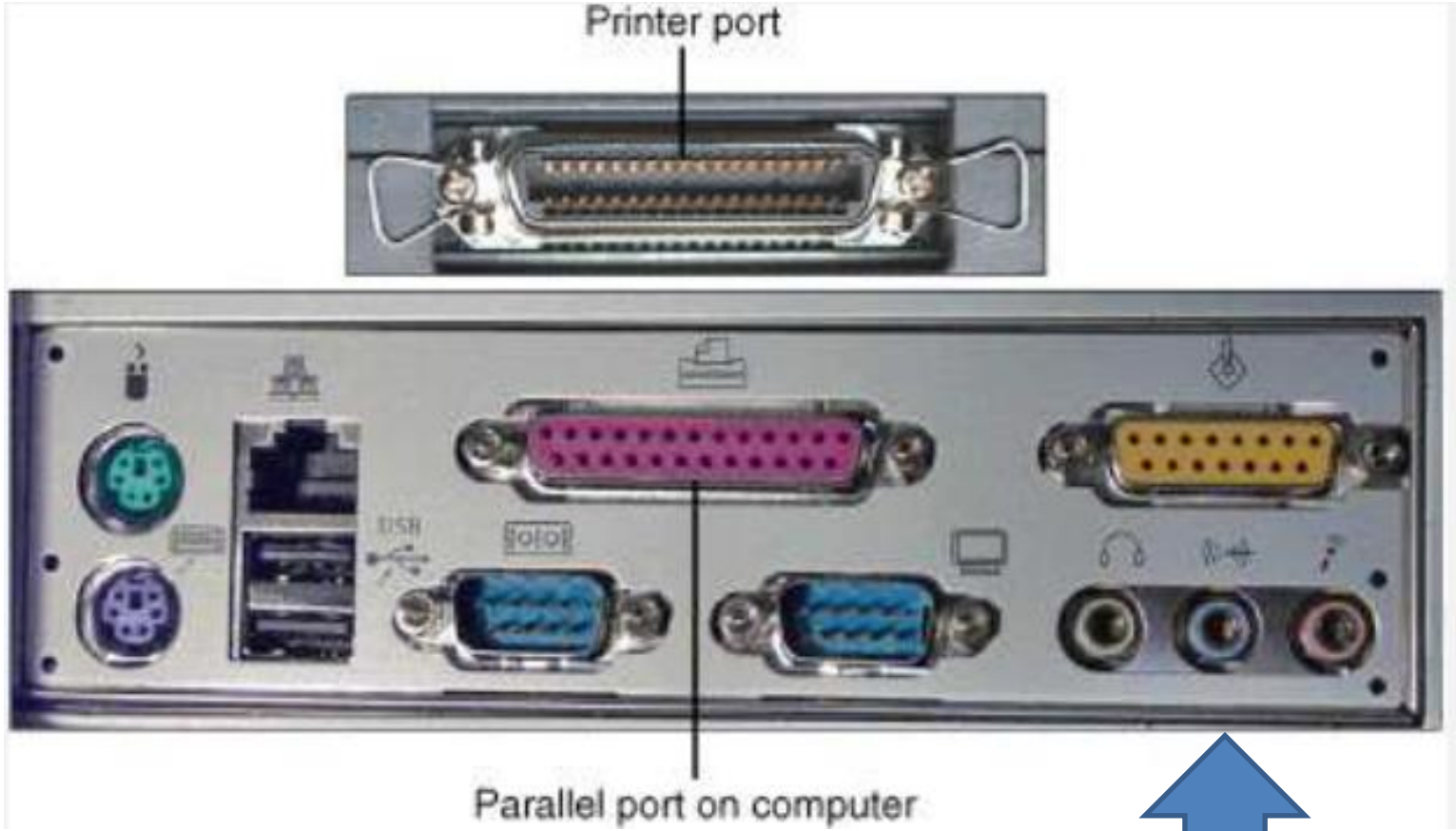
Technology affordances are often based in affordances from the physical world

The actual actionable properties of the product



# Donald Norman's model

1. Affordances



# Donald Norman's model

## In Other Words

An affordance is what a thing communicates about how it can be used, often by its appearance

"In general, when the apparent affordances of an artifact matches its intended use, the artifact is easy to operate. When apparent affordances suggest different actions than those for which the object is designed, errors are common."

Challenges arise if there is a mismatch between implied use versus intended use

**بعبارة أخرى هي كيف يمكن استخدام غرض ما ، غالبًا من خلال مظهره.**
**بشكل عام ، عندما تتطابق العناصر الظاهرة للغرض مع الاستخدام المقصود ، تكون هذه الأداة سهلة التشغيل. عندما تشير affordance إلى إجراءات مختلفة عن تلك التي تم تصميم الكائن من أجلها ، فإن ذلك مدعاة للخطأ**
**تنشأ التحديات إذا كان هناك عدم تطابق بين الاستخدام الضمني والاستخدام المقصود**

# Donald Norman's model

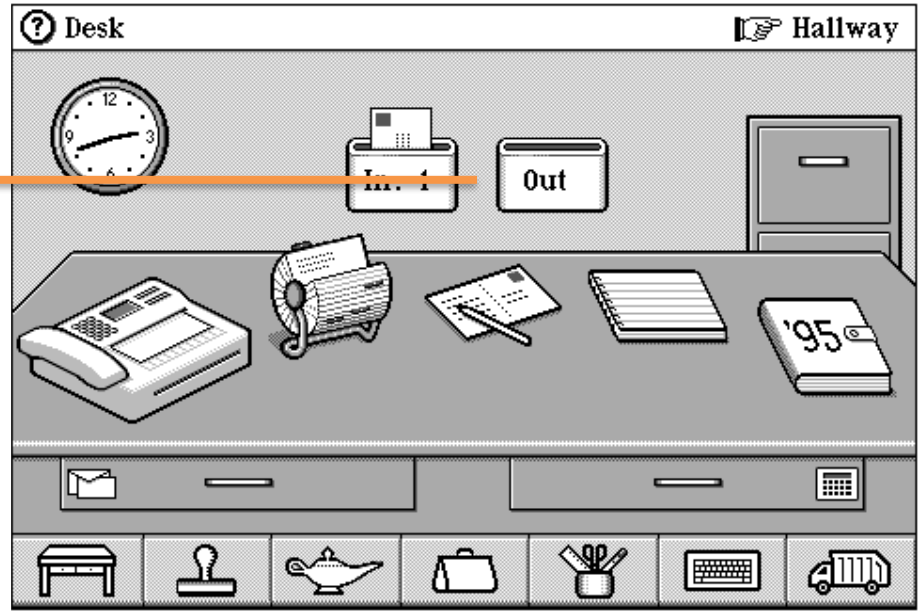
## False Affordances

Quick, open the top drawer

# Donald Norman's model

## False Affordances

# Donald Norman's model




## 2. Metaphors

Suggest an existing mental model

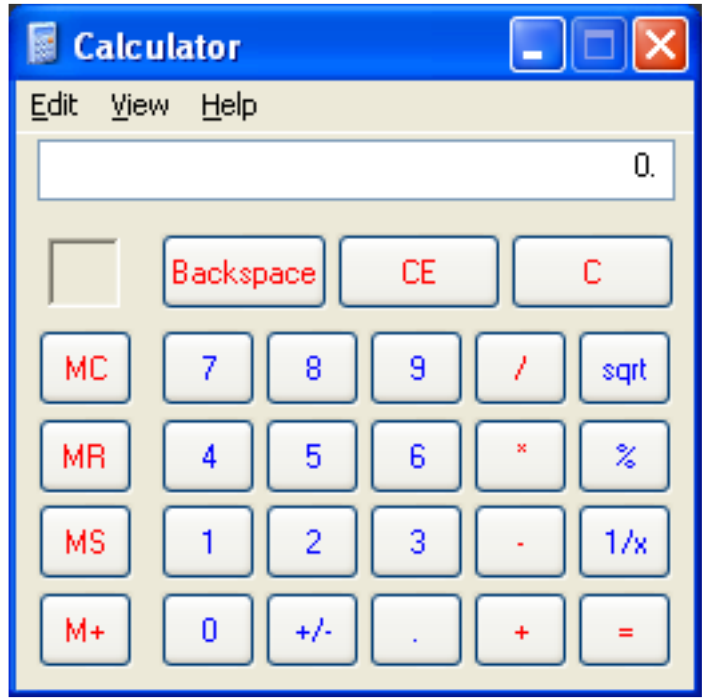
**Desktop metaphor**

Not an attempt to simulate a real desktop
Leverages knowledge of files, folders, trash
Explains why some windows seem hidden

# Donald Norman's model

## Mechanical-Age Metaphors

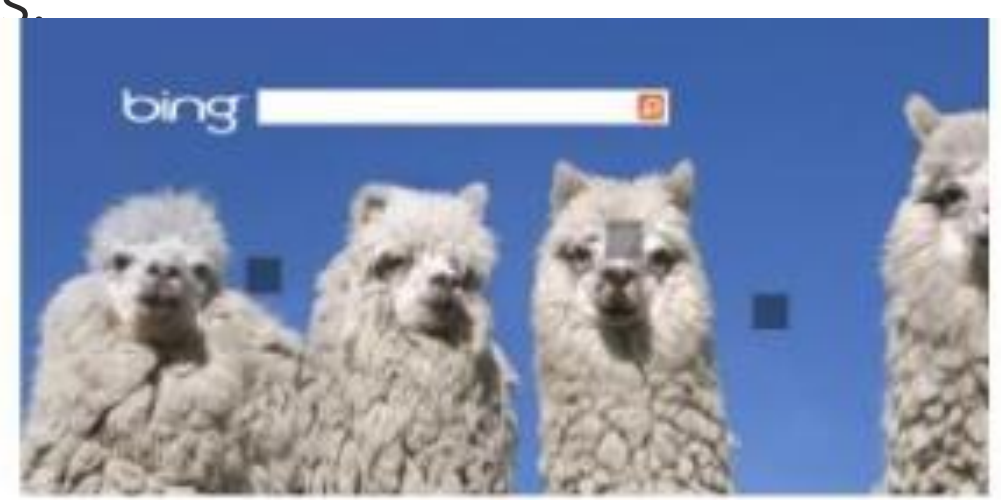
Operate as their mechanical-age counterparts did, not taking advantage of the digital domain to escape the limitations of the original



# Donald Norman's model

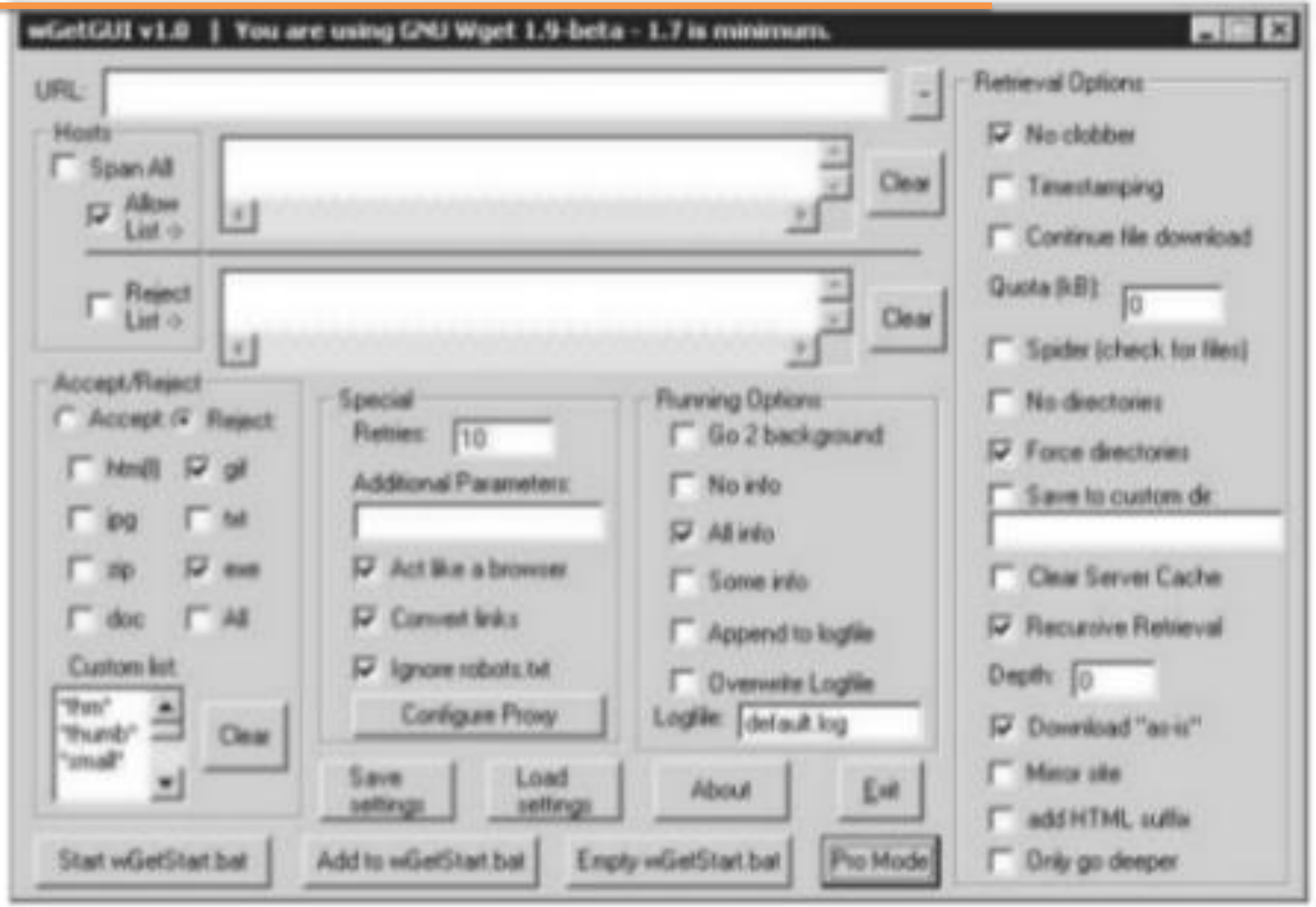
## 3.simplicity

he design should make simple, common tasks easy, communicating clearly and simply in the user's own language, and providing good shortcuts that are meaningfully related to longer procedures.



# Donald Norman's model

## 3.simplicity



# Donald Norman's model

## 4. Visibility

Can see the state of a device and possible actions

- Car controls are positioned in a way that they can be easily found and used

# Donald Norman's model

## 5.Feedback

- what is it doing now? what action has been performed?
- needs to be **immediate and synchronized** with user action

# Donald Norman's model

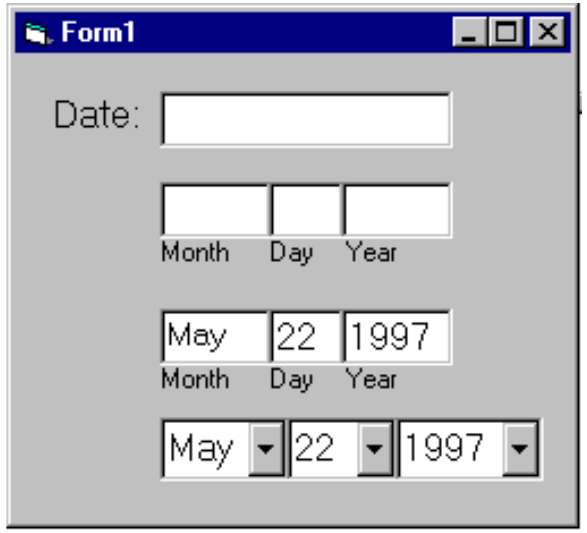
## 6.Constraints

# Donald Norman's model

## 6.Constraints

Prevent some actions while allowing others

Prevent errors before they can happen



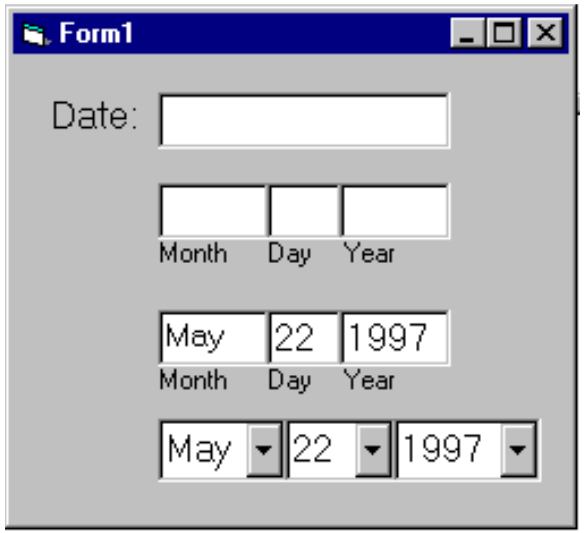

Disruptive error messages are a last resort

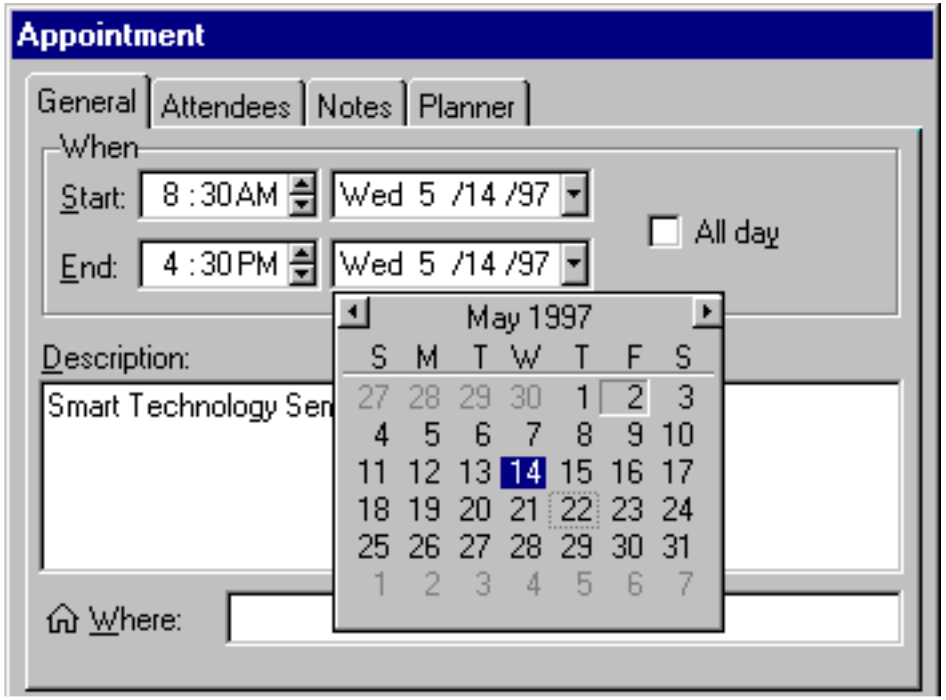
# Donald Norman's model

## 6.Constraints

Prevent some actions while allowing others

Prevent errors before they can happen

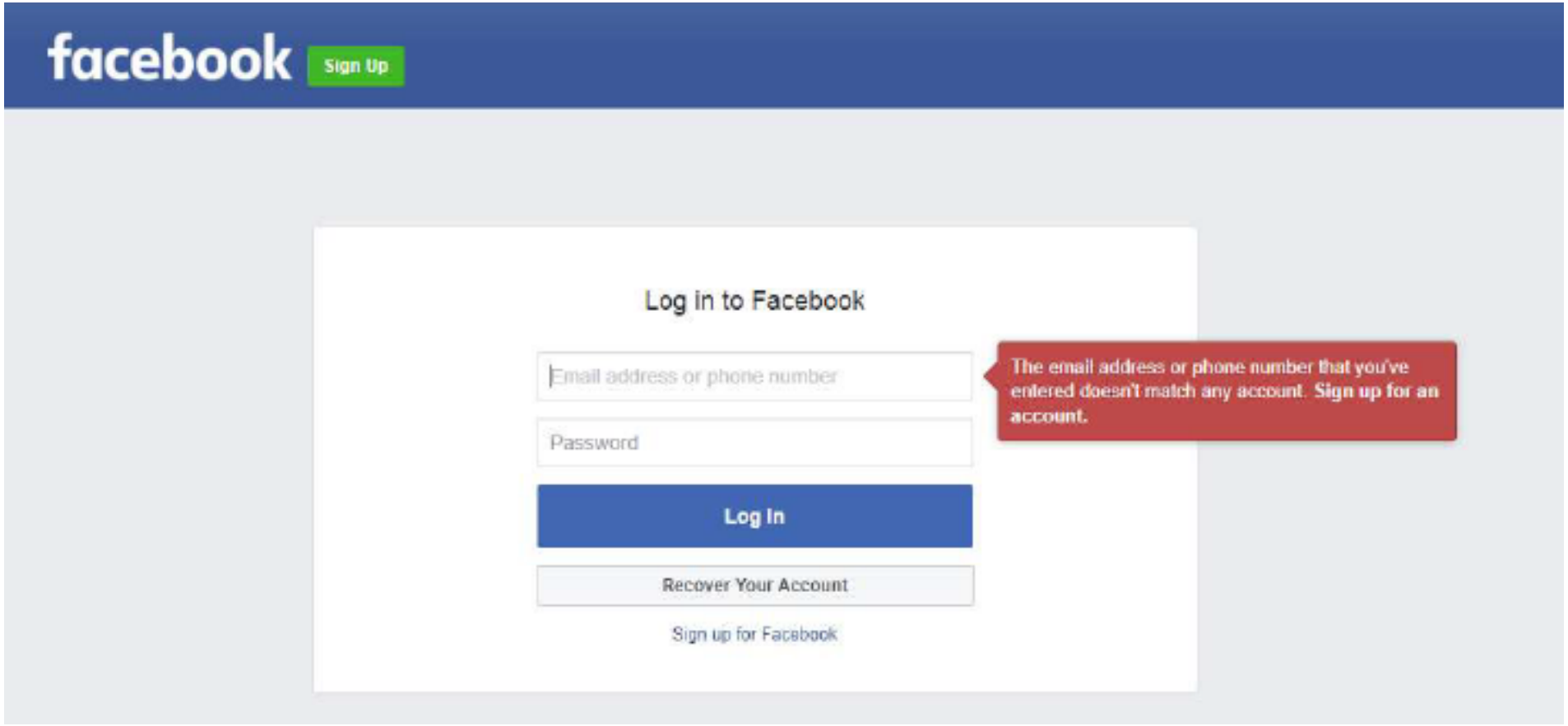



Disruptive error messages are a last resort

# Donald Norman's model

## 6.Constraints


facebook
Sign Up
Log in to Facebook
Email address or phone number
Password
Log In
Recover Your Account
Sign up for Facebook
The email address or phone number that you've entered doesn't match any account. Sign up for an account.

# Donald Norman's model

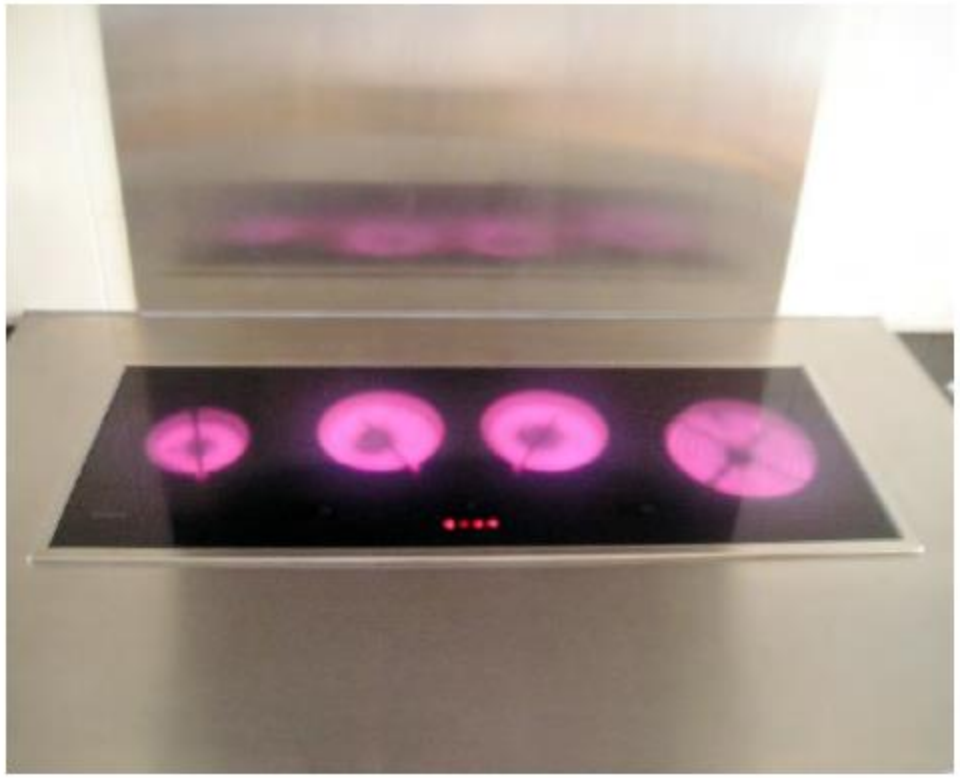
## 7.Mapping

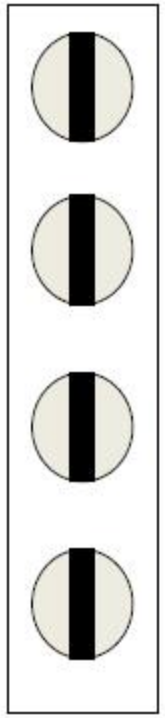
Correspondence between an interface and the corresponding action in 'the world'

Minimize cognitive steps totransform action into effect, orperception into comprehension(i.e., execution and evaluation)

# Donald Norman's model

## 7.Mapping





# Donald Norman's model

## 7.Mapping

# Donald Norman's model

## 8.Consistency

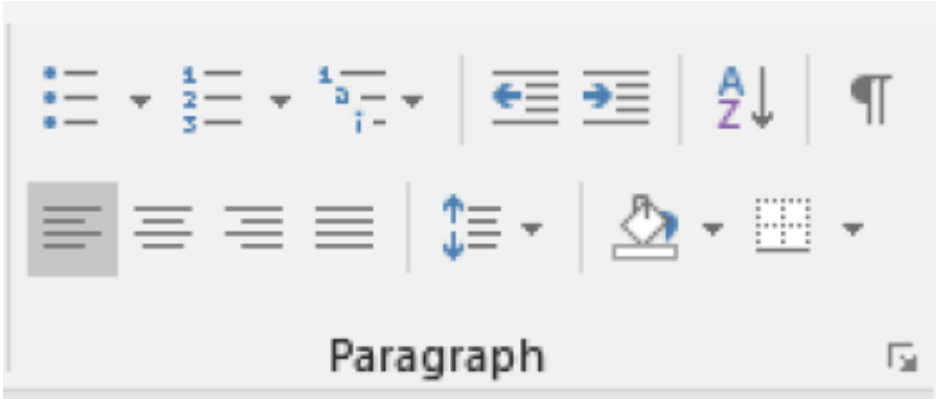
Interfaces should be meaningfully consistent

Ubiquitous use of same keys for cut/copy/paste

**Types of consistency**

1. Internal (i.e., within itself)

e.g., same terminology and layout throughout




2. External (i.e., with other applications)

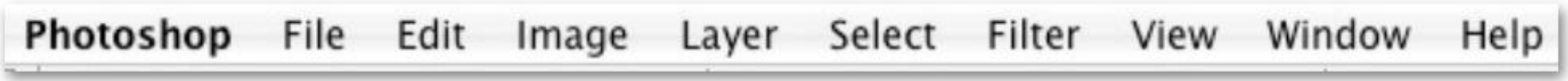
e.g., common widget appearance

e.g., design patterns common across applications

# Donald Norman's model

## 8.Consistency

**External**

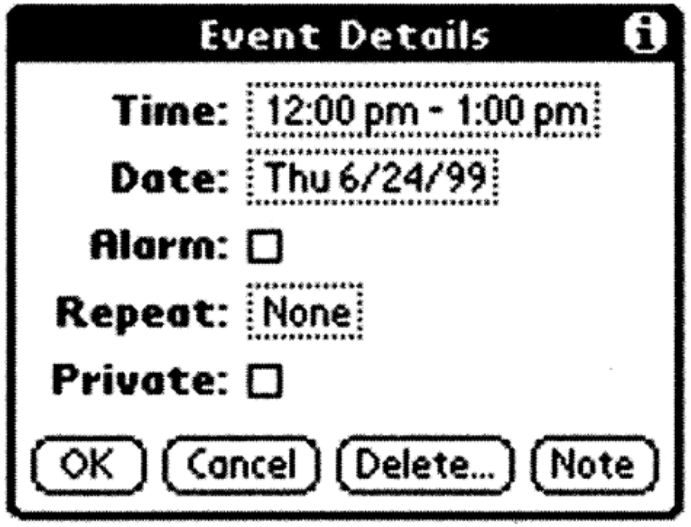


# Donald Norman's model

## 8.Consistency

**Is Consistent Always Better?**

**Should "new" & "delete" be in the same place?**



# Donald Norman's model

## 9.Modes

Modes force people to divide their model

The button to record micro

# Donald Norman's model

## 9.Modes

**Active** versus **Passive** Modes

Active modes require constant action to maintain

When that action has ended, so does the mode

e.g., Shift

Passive modes require action to set, and a separate action to unset, or to set again

e.g., CAPS LOCK- DRY or HEAT button un washing machine

Active modes are generally preferred

# Donald Norman's model

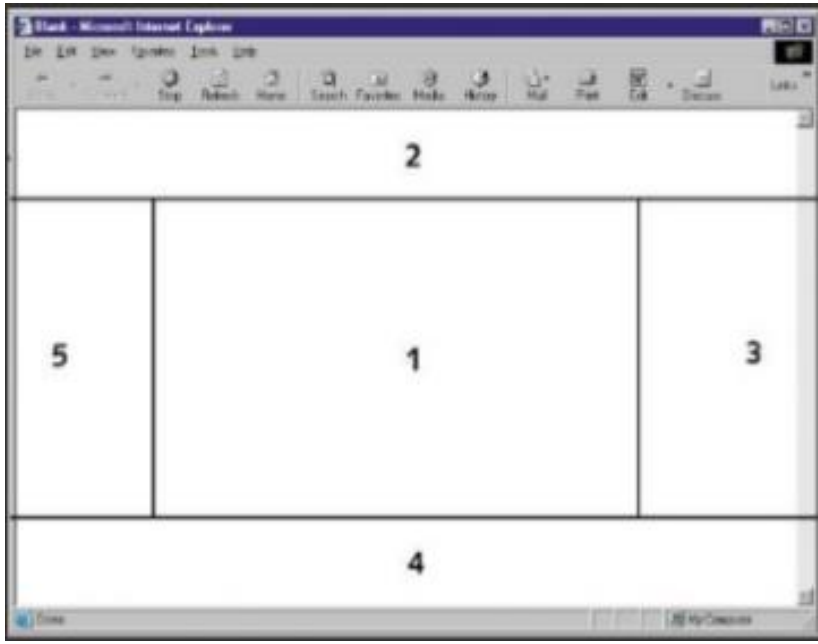
## 10.Tolerance

Design For Errors, Allow Mistakes!
The Design Should Be **FLEXIBLE AND TOLERANT**, Reducing The Cost Of Mistakes And Allowing UNDOING, While Also **PREVENTING ERRORS** By Tolerating Varied Inputs And By Interpreting All Reasonable Actions

# Donald Norman's model

## 11.Structure

Design should organize the user interface purposefully, in meaningful and useful ways based on clear, consistent models that are apparent and recognizable to users, putting related things together and separating unrelated things, differentiating dissimilar things and making similar things resemble one another



# Donald Norman's model

## 12.Standardization

If all else fails, standardize

Fewer things to memorize

Reduced learning time

Adapt to new situations faster

e.g., keyboard layout not optimal, but standard

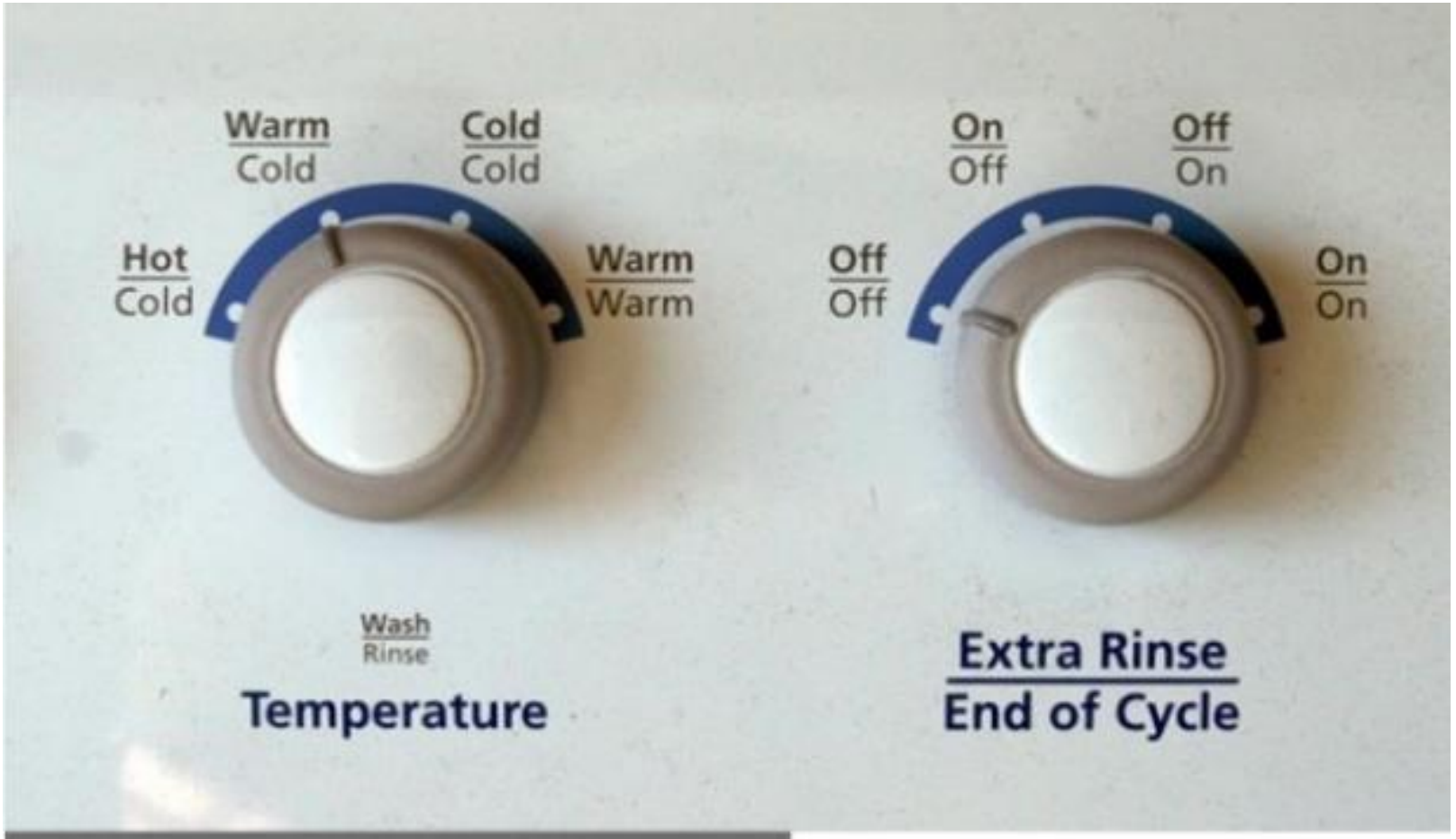
layout – QWERTY

- Standardised layout

but …

– non-alphanumeric keys are placed differently
– accented symbols needed for different scripts
– minor differences between UK and USA keyboards

# Donald Norman's model




structure, mapping and affordance issue

# ergonomics

physical aspects of interfaces

**Dr. Maisa Diab**

# Ergonomics

Ergonomics, also known as human factors, is the scientific discipline that seeks to understand and improve human interactions with products, equipment, environments and systems.

Ergonomics good at defining standards and guidelines for constraining the way we design certain aspects of systems

Some of the Ergonomics example:

1. Arrangement of controls and displays
2. surrounding environment
3. health issues
4. The use of colour

# Ergonomics – examples

Arrangement …displays
surrounding environment
health issues - use of colour

**Dr. Maisa Diab**

# Arrangement of controls and displays

Controls and displays should be grouped logically to allow rapid access by the user.

- Arrangement of controls and displays is more important in critical system were users work under pressure. E.g. air traffic control

- Controls grouped and organized according to:
    1. Function: according to their functionality
    2. Frequency of use: how frequently they used
    3. Sequentially: to reflect the order of their use

# Arrangement ..(cont.)

- Arrangement in relation to users positions:
  - Users should be able **to reach** all controls necessary and view all displays without excessive body movement.
  - **Critical displays** should be at eye level.
  - **Lighting** should be arranged to avoid reflection distorting displays.
  - Controls should be **spaced** to provide adequate room for the user to manoeuvre

# surrounding environment

- Where the system will be used? By whom the it will be used? Will users sitting, standing, or moving about?
- All users should be comfortable by using the system:
  - For **long period of use**, users should be seated for **comfort**, and seats should provide back support.
  - **Seating** arrangements adaptable to cope with all sizes of user
  - If user required **to stand**, the user should have room to move around to reach all control.
- Physical environment will be more critical in specific control.

# health issues

Poor designs in critical system can results to death. E.g. aircraft crashing

health issues

e.g. physical position, environmental conditions :temperature, humidity, lighting, noise, and usage time

# The use of colour

Colour should correspond to users expectation

e.g. Red frequently associated with stop, therefore it can be use for warning
e.g. Green frequently associated with go, therefore it can be use for okay.
e.g. Yellow frequently associated with standby, therefore it can be use for standby and secondary function.

- Colours and culture
- Red

**China:** Good luck, celebration,

**Western:** Warning, danger, stop

# interaction styles

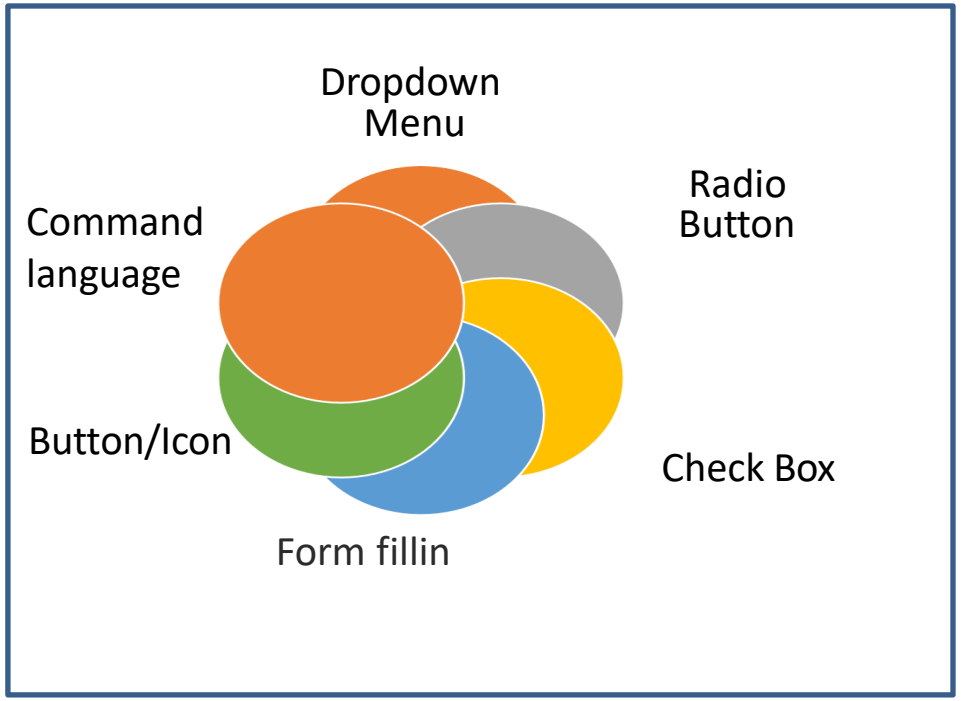
dialogue … computer and user

distinct styles of interaction

**Dr. Maisa Diab**

# Interaction Styles

Use **interaction style** correctly and apply them to the right job to build user-friendly interaction and create a positive user experience



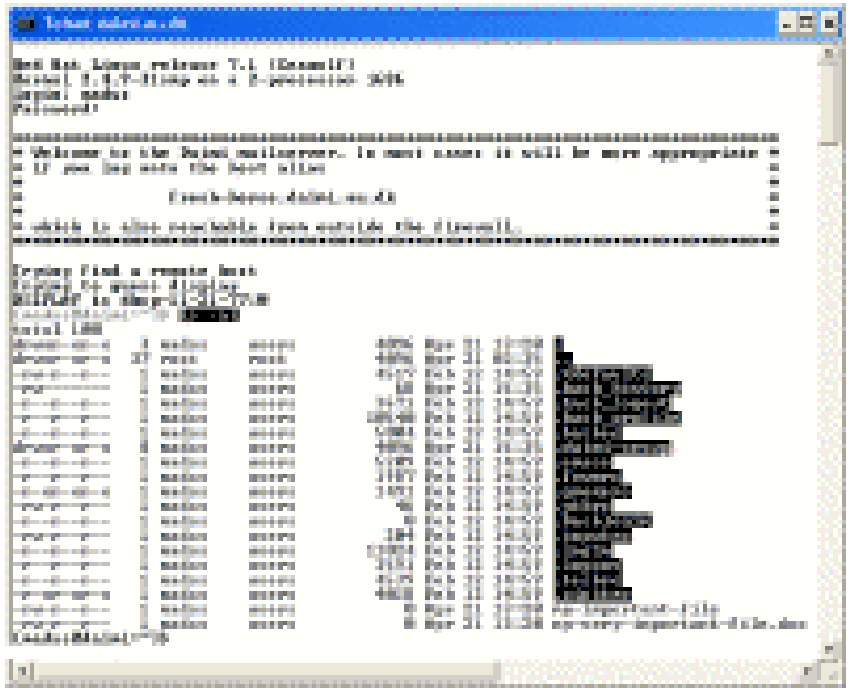
# Common interaction styles

- command line interface
- WIMP

# Command line interface

**Command language (or command entry):**

Command language is the earliest form of interaction style and is still being used, though mainly on Linux/Unix operating systems.



- Learnability of commands is very poor.
- Error rates are high.
- Flexible.
- Appeals to expert users.

# WIMP Interface

Windows
Icons
Menus
Pointers

… or windows, icons, mice, and pull-down menus!

default style for majority of interactive computer systems, especially PCs and desktop machines

# Windows

Areas of the screen that behave as if they were independent

- can contain text or graphics
- can be moved or resized
- can overlap and obscure each other, or can be laid out next to one another (tiled)

scrollbars

- allow the user to move the contents of the window up and down or from side to side

title bars

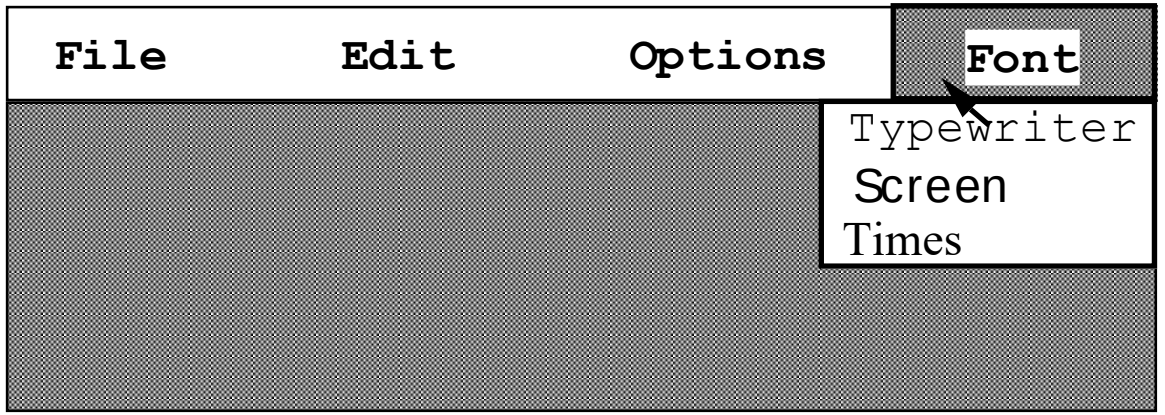
- describe the name of the window

# Icons

- small picture or image
- represents some object in the interface
  - often a window or action
- windows can be closed down (iconised)
  - small representation of many accessible windows
- icons can be many and various
  - highly stylized
  - realistic representations.

# Menus

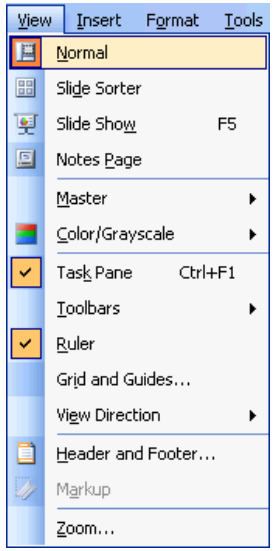
Choice of operations or services offered on the screen
Required option selected with pointer

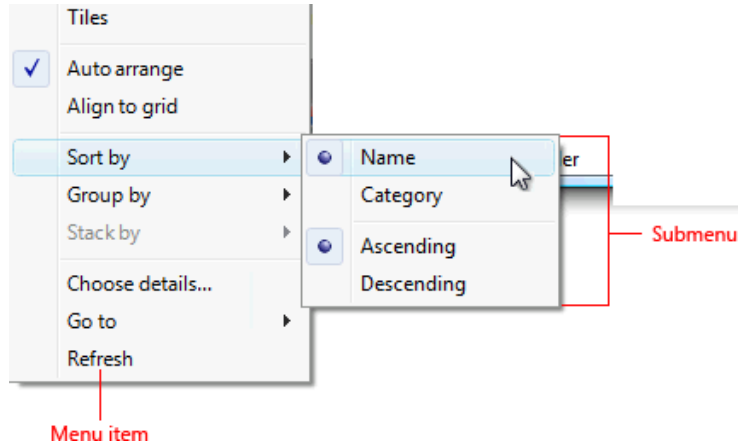



problem – take a lot of screen space
solution – pop-up: menu appears when needed

# Menus design issues

- which kind to use
- what to include in menus at all
- words to use (action or description)
- how to group items
- choice of keyboard accelerators



Why Microsoft have changed the menu from dropdown menu to tabbed menu? Think about it!

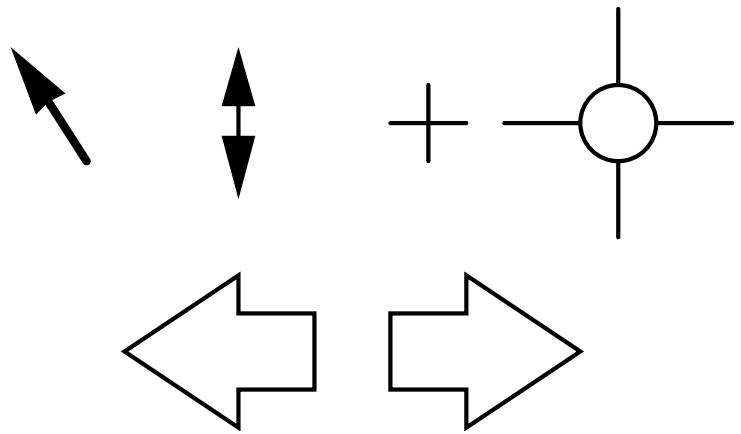
# Pointers

important component

WIMP style relies on pointing and selecting things

uses mouse, trackpad, joystick, trackball, cursor keys or keyboard shortcuts

wide variety of graphical images

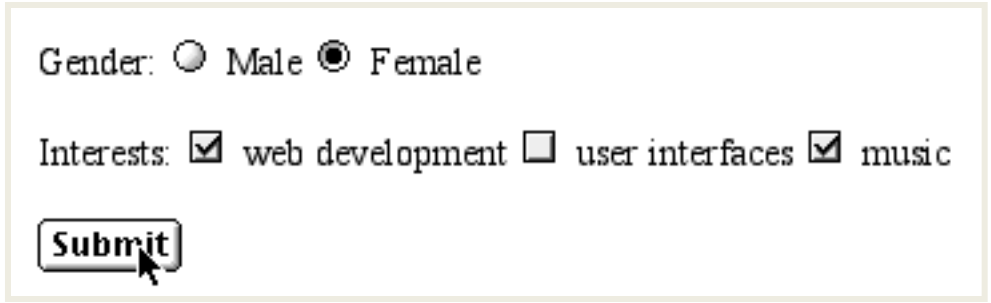


# Buttons

individual and isolated regions within a display that can be selected to invoke an action

Special kinds

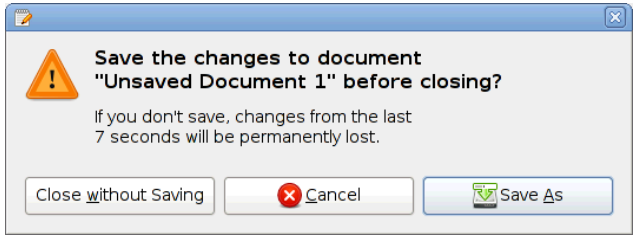
- radio buttons
  - set of mutually exclusive choices
- check boxes
  - set of non-exclusive choices

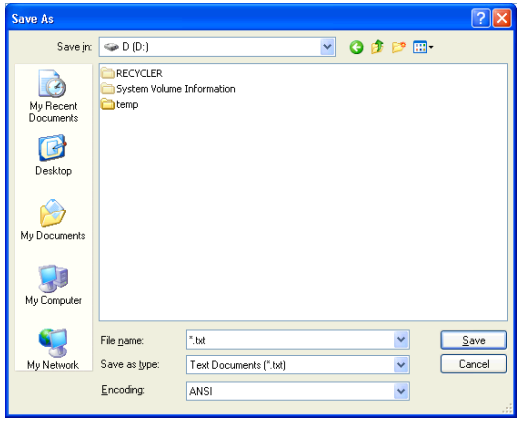


# Dialogue boxes

information windows that pop up to inform of an important event or request information.

e.g: when saving a file, a dialogue box is displayed to allow the user to specify the filename and location. Once the file is saved, the box disappears.

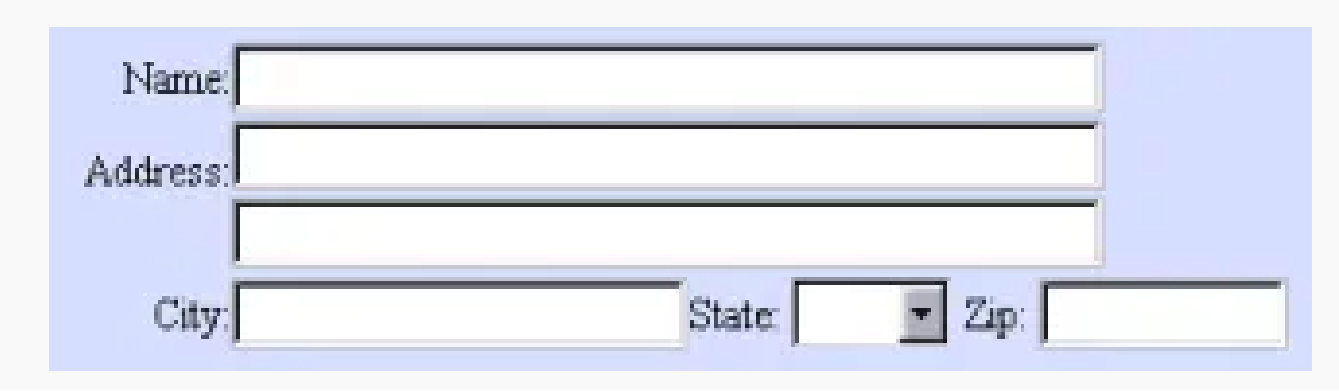

Save the changes to document
"Unsaved Document 1" before closing?
If you don't save, changes from the last
7 seconds will be permanently lost.
Close without Saving
Cancel
Save As



# Form fillin

The form fillin interaction style (also called "fill in the blanks") was aimed at a different set of users than command language, namely non-experts users.

- Simplifies data entry
- Shortens learning



# Good flow tips

- The **elements that initiate a task** should be in upper left corner or upper centre of UI, (ex: Logo , website title)
- **Related elements** should be placed together, and unrelated elements should be separated
- **Frequently used elements** should come before infrequently used elements
- The **elements that complete a task** should be placed in the lower right corner of UI, (ex: save/cancel buttons)

The good flow look like a curve shape that starts from the upper left corner of the interface , and ends at the lower right corner of the interface